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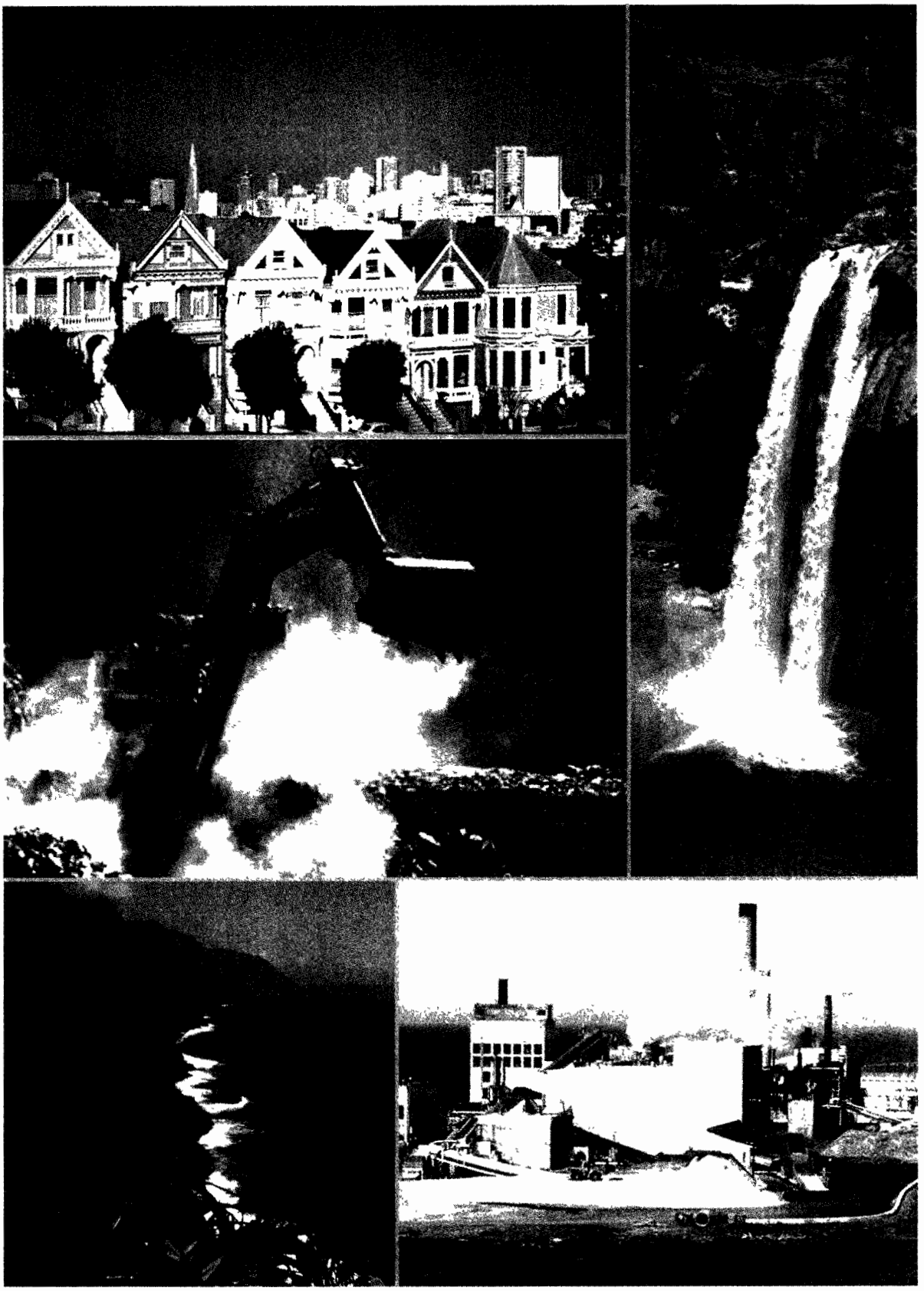
2000 Toxics Release Inventory (TRI)

Public Data Release Report



Public Access to the Toxics Release Inventory (TRI)

TRI Data Products

Data Product	Point of Access	Contact Information
2000 TRI Executive Summary (reference EPA 260-S-02-001) 2000 TRI Public Data Release Report (reference EPA 260-R-02-003)	U.S. Environmental Protection Agency Ariel Rios Building, MC 2844T 1200 Pennsylvania Ave., N.W. Washington, D.C. 20460 Attn: TRI Documents	(202) 564-9554 E-mail: tridoc@epa.gov
2000 State Fact Sheets Report (reference EPA 260-F-02-004)	U.S. EPA Toxics Release Inventory (TRI) Website — 2000 Data Release	http://www.epa.gov/tri/tridata/tri00
2000 State Data Files in Dbase format	U.S. EPA Toxics Release Inventory (TRI) Website	http://www.epa.gov/tri/tridata/tri00
Chemicals in Your Community (reference EPA 550-K-99-001)	U.S. EPA's National Service Center for Environmental Publications (NSCEP)	(800) 490-9198 (513) 489-8190 FAX: (513) 489-8695 order online: http://www.epa.gov/ncepihom

TRI Online Access

Online Provider of TRI Data	Internet Access Address
TRI Explorer provides fast and easy access to the TRI data via U.S. EPA's latest TRI tool	http://www.epa.gov/triexplorer
U.S. EPA's TRI Program Homepage and 2000 data release page	http://www.epa.gov/tri http://www.epa.gov/tri/tridata/tri00
U.S. EPA Envirofacts provides access to TRI data via U.S. Epa's Envirofacts Data Warhouse Query Engine	http://www.epa.gov/enviro/html/toxic_releases.html
Right-to-Know Network, operated by two nonprofit organizations (OMB Watch and the Center for Public Data Access), provides free access to TRI Data	http://www.rtknet.org
TOXNET® the National Library of Medicine's (NLM) Toxicology Data Network, provides free access to TRI data	http://toxnet.nlm.nih.gov/

2000 Toxics Release Inventory Public Data Release Report

U.S. Environmental Protection Agency
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Washington. D.C. 20460

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Background

The Toxics Release Inventory (TRI) is a publicly available database that contains information on toxic chemical releases and other waste management activities reported annually by certain covered industries as well as by federal facilities. This inventory was established under the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), which requires facilities to use their best readily available data to calculate their releases and other waste management estimates. If facilities do not have actual monitoring data required under other laws, submitted values are derived from various estimation techniques. There are now more than 650 toxic chemicals and toxic chemical categories on the list of chemicals that must be reported to EPA and the States under the EPCRA/TRI Program.

A facility must report to TRI if it meets the following three criteria:

- Conducts manufacturing operations within Standard Industrial Classification (SIC) codes 20 through 39 or, beginning in the 1998 reporting year, if it is in one of the following industry categories: metal mining, coal mining, electric utilities that combust coal and/or oil, chemical wholesale distributors, petroleum terminals and bulk storage facilities, Resource Conservation and Recovery Act (RCRA) subtitle C hazardous waste treatment and disposal facilities, and solvent recovery services. Also, federal facilities must report to TRI regardless of their SIC code classification;

- Has 10 or more full-time employee equivalents; and

- For all but certain persistent bioaccumulative toxic (PBT) chemicals, manufactures or processes more than 25,000 pounds or otherwise uses more than 10,000 pounds of any listed chemical during the calendar year.

For the 2000 reporting year, the reporting criteria were changed for certain PBT chemicals. TRI was expanded to include new PBT chemicals and reporting thresholds were lowered for both the newly-added PBT chemicals and certain PBT chemicals already on the TRI list. In a rule (64 FR 58666) finalized on October 29, 1999, EPA added six PBT chemicals and one PBT chemical category. Two of the chemicals were added to the Polycyclic Aromatic Compounds category. PBT chemicals persist and bioaccumulate in the environment and they have the potential to pose greater exposure to humans and the environment over a longer period of time, making even small quantities of these chemicals of concern. Therefore, EPA established thresholds lower than the 25,000 pounds and 10,000 pounds. For those chemicals that are persistent and bioaccumulate, a threshold of 100 pounds manufactured, processed or otherwise used was established. For the subset of PBT chemicals that are highly persistent and highly bioaccumulative, a threshold of 10 pounds was established. In addition, because dioxins are highly persistent and highly bioaccumulative, but are generally produced in extremely small amounts, the threshold for dioxin and dioxin-like compounds was set at 0.1 gram.

2000 DATA RELEASE

The time period covered for the 2000 data release is the reporting year 2000. A reporting year is the same as a calendar year. The 2000 data were submitted to EPA by July 1, 2001 and are the focus of this report. The Public Data Release report is an analysis of the 2000 TRI data and trends in the data from 1988 to 2000.

For the 2000 reporting year, certain PBT chemicals (see above) were added to the list of TRI chemicals. Also, as part of the October, 1999 PBT chemical rule, EPA added vanadium compounds to the TRI list and changed the reporting qualifier for vanadium (already on the list of TRI chemicals) from "fume or dust" to "except when contained in an alloy." Vanadium and vanadium compounds have not been classified as PBT chemicals.

The 1998, 1999 and 2000 data include reporting by the "original" industries (the manufacturing sector which has been reporting since 1987) as well as the "new" industries, which have been reporting since 1998. Those federal facilities reporting activities within the new industry sectors are included in the "new" industries. Otherwise federal facilities are included in the original industries. The analysis of trends in the TRI data from 1988 to 2000 only includes the "original" industries and those listed chemicals that have been reportable since 1988.

Year-to-year comparisons must be based on a consistent set of chemicals and reporting industries to assure that any changes in releases or other waste management data do not simply reflect changes in reporting requirements from year to year. Thus, comparisons of 2000 data with prior years do not include persistent bioaccumulative toxic chemicals subject to the October 1999 PBT chemical rule, or vanadium and vanadium compounds since reporting thresholds or reporting definitions for these chemicals have changed.

Total On-site and Off-site Releases, 2000

In 2000, 23,484 facilities submitted 91,513 forms. On- and off-site releases for all TRI industries totaled 7.10 billion pounds for 2000. The manufacturing industries accounted for 32 percent of this total. Among the new industries, metal mining accounted for 47 percent and electric utilities accounted for 16 percent of this total. (See Table ES-1 and Figure ES-1.)

On-site air emissions were 1.90 billion pounds, 27 percent of total releases. More than half (58 percent) of all air emissions were reported by the manufacturing industries. Electric utilities accounted for another 41 percent. The other largest type of release was on-site land releases, primarily from metal mining. Metal mines reported about 80 percent of the total of 4.13 billion pounds of on-site land releases. RCRA subtitle C landfills accounted for 206.5 mil-

Table ES-1: TRI On-site and Off-site Releases by Industry, Original* (Manufacturing) and New Industries, 2000

				On-site Releases							Off-site Releases	
						Underground Injection		On-site Land Releases				
SIC Code	Industry	Total Facilities	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
		Number	Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
20-39	Manufacturing Industries	21,352	74,131	1,106,587,862	255,370,170	207,059,365	236,937	10,469,795	294,709,557	1,874,433,686	409,966,012	2,284,399,698
10	Metal Mining	97	678	3,142,461	492,008	0	37 614,017	0	3,315,896,409	3,357,144,895	620,418	3,357,765,313
12	Coal Mining	81	271	1,183,965	741,153	14,399	208,453	0	13,820,012	15,967,981	20	15,968,001
491/493	Electric Utilities	706	6,210	787,819,955	4,206,628	0	0	1,373,383	287,498,849	1,080,898,816	71,343,970	1,152,242,786
5169	Chemical Wholesale Distributors	467	3,446	1,361,672	4,753	0	0	0	63,151	1,429,576	182,215	1,611,790
5171	Petroleum Terminals/Bulk Storage	566	4,096	3,362,183	21,909	0	0	486	36 648	3,421,226	456,862	3,878,087
4953/7389	Hazardous Waste/Solvent Recovery	215	2,681	948,196	45,763	33,903,476	0	194,611,003	12,922,792	242,431,230	42,519,359	284,950,589
	Total	23,484	91,513	1,904,406,293	260,882,385	240,977,239	38,059,407	206,454,666	3,924,947,419	6,575,727,410	525,088,854	7,100,816,264

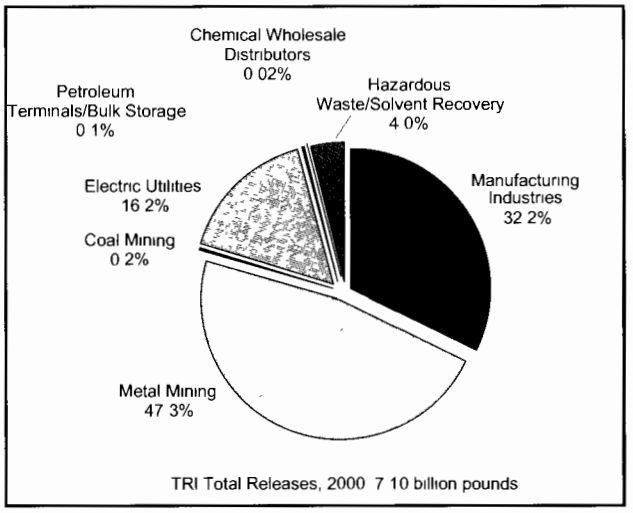
Note· **On-site Releases** are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI facilities that reported the amount as an on-site release

Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

One facility, Phelps Dodge Miami of Claypool, AZ, that reported under SIC code 33 and SIC code 10 in 2000 and previous years has been included in the new industry category SIC code 10 for the purpose of this analysis

*Original industries include facilities in manufacturing SIC codes 20-39 as well as federal facilities that report activities in the manufacturing SIC codes or activities not falling within the new industry SIC Codes

Figure ES-1: TRI Total Releases by Industry, Original (Manufacturing) and New Industries, 2000



Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI facilities that reported the amount as an on-site release

lion pounds of on-site land releases and other on-site land releases accounted for 3.92 billion pounds.

Releases also include transfers of TRI chemicals in waste sent off-site for disposal to such sites as landfills and underground injection wells. The manufacturing industries reported more than three-quarters (78 percent) of these off-site releases, nearly 410.0 million pounds of the 525.1 million pounds of total off-site releases reported by all TRI industries.

On- and Off-site Releases of PBT Chemicals

PBT chemicals accounted for 12.1 million pounds of total on- and off-site releases in 2000. On-site land releases were 44 percent of the total. Air emissions of PBT chemicals in 2000 were 2.2 million pounds, 18 percent of the total. Surface water discharges and underground injection of PBT chemicals in 2000 totaled less than 45,000 pounds. Of the on-site land releases, RCRA subtitle C landfills

Table ES-2: TRI On-site and Off-site Releases, PBT Chemicals, 2000

			On-site Releases								
					Underground Injection		On-site Land Releases			Off-site Releases	
CAS Number	Chemical	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
		Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
--	**Dioxin and Dioxin-like compounds***	**1,274**	**11.51**	**4.58**	**0.63**	**0.27**	**10.81**	**73.46**	**101.24**	**118.85**	**220.09**
--	*Dioxin and dioxin-like compounds (in grams)**	*1,274*	*5,217 775*	*2,075 634*	*284 112*	*121 080*	*4,903 737*	*33,313 286*	*45,915 624*	*53,898 465*	*99,814 089*
	Mercury and Mercury Compounds	**1,596**	**164,492 53**	**2,302.28**	**1,931 72**	**9,781.80**	**91,297.96**	**3,196,983 53**	**3,466,789 83**	**849,872.31**	**4,316,662.14**
7439-97-6	Mercury	566	29,833 13	392 31	1,121 00	255 70	20,280 78	18,164 40	70,047.32	24,490 28	94,537.60
--	Mercury compounds	1,030	134,659 41	1,909 98	810 72	9,526 10	71,017 18	3,178,819 12	3,396,742 51	825,382 03	4,222,124 54
	Polycyclic Aromatic Compounds	**3,550**	**1,916,436 42**	**18,137.05**	**0 00**	**10,000.00**	**201,581 64**	**115,205.99**	**2,261,361 11**	**3,141,614.53**	**5,402,975.63**
191-24-2	Benzo(g,h,i)perylene	1,366	42,318 09	531 22	0 00	0 00	976 14	5,236 07	49,061 52	116,927 71	165,989.23
--	Polycyclic aromatic compounds	2,184	1,874,118 34	17,605 83	0 00	10,000 00	200,605 50	109,969 93	2,212,299 59	3,024,686 82	5,236,986 40
1336-36-3	**Polychlorinated Biphenyls (PCBs)**	**171**	**5,854.15**	**28 82**	**0.60**	**0.00**	**1,371,343.20**	**57,544.00**	**1,434,770 77**	**26,146.07**	**1,460,916 85**
	Pesticides	**138**	**6,339 64**	**330.62**	**3.16**	**0 00**	**33,707.32**	**28,498.00**	**68,878.74**	**13,564.60**	**82,443.34**
309-00-2	Aldrin	11	0 79	0 00	0 00	0 00	2,342 00	0.00	2,342 79	2.58	2,345 37
57-74-9	Chlordane	21	13 70	0 00	0 00	0 00	8,947 74	0 00	8,961 44	828 59	9,790 03
76-44-8	Heptachlor	15	6 60	0 00	0 00	0 00	2,372 56	0 00	2,379 16	221 87	2,601 03
465-73-6	Isodrin	6	0 05	0 00	2 95	0 00	0 00	0 00	3 00	0 00	3 00
72-43-5	Methoxychlor	20	59 83	0 00	0 00	0 00	2,569 00	0 00	2,628 83	31.75	2,660 58
40487-42-1	Pendimethalin	18	733 54	329 00	0 00	0 00	332 00	20,343 00	21,737 54	9,555 00	31,292 54
8001-35-2	Toxaphene	16	20 98	1 62	0 21	0 00	5,928 02	0 00	5,950 83	176 14	6,126 97
1582-09-8	Trifluralin	31	5,504 15	0 00	0 00	0 00	11,216 00	8,155 00	24,875 15	2,748 67	27,623 82
	Other PBTs	**172**	**63,976 18**	**515.29**	**60 27**	**0.02**	**17,578.20**	**205,422 10**	**287,552 06**	**551,362.24**	**838,914 30**
118-74-1	Hexachlorobenzene	100	1,426 24	331 44	48 37	0 02	16,955 00	5,745.20	24,506 26	13,021 04	37,527 30
29082-74-4	Octachlorostyrene	4	0 00	0 00	0 00	0 00	0 00	148 30	148 30	436 90	585 20
608-93-5	Pentachlorobenzene	20	162 54	173 85	11 90	0 00	623 20	1,999 60	2,971.09	355 00	3,326 09
79-94-7	Tetrabromobisphenol A	48	62,387 41	10 00	0 00	0 00	0 00	197,529 00	259,926 41	537,549 30	797,475 71
	Total	**6,901**	**2,157,110 44**	**21,318 64**	**1,996 38**	**19,782.09**	**1,715,519 14**	**3,603,727.08**	**7,519,453 76**	**4,582,678 60**	**12,102,132 35**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

* The chemical category dioxin and dioxin-like compounds is reported in grams Where the category dioxin and dioxin-like compounds is shown on a table with other TRI chemicals, it is presented in pounds The grams are converted to pounds by multiplying by 0 002205

accounted for 1.7 million pounds, with other on-site land releases (e.g, surface impoundment, other landfills, land treatment) totaling 3.6 million pounds. Off-site releases (transfers to disposal) constituted 4.6 million pounds, 38 percent of the total releases for PBT chemicals. (See Table ES-2.)

Of the 12.1 million pounds of total on- and off-site releases of PBT chemicals, polycyclic aromatic compounds constituted almost 45 percent, mercury and mercury compounds almost 36 percent, and polychlorinated biphenyls (PCBs) 12 percent.

Forms for the dioxin and dioxin-like compounds category represented 18.5 percent (1,274 out of 6,901) of all the PBT chemicals forms for 2000. Dioxin and dioxin-like compounds are reported in grams and subject to a lower reporting threshold (0.1 grams) than the other PBT chemicals. Over 99,814 grams of total releases of dioxin and dioxin-like compounds were reported for 2000. Over half (54.0 percent) were released off-site as transfers to disposal. Of the on-site releases, most (72.6 percent) were other on-site land releases, that is on-site land releases to other than RCRA subtitle C landfills, such as other types of landfills, surface impoundments, and land treatment.

More detailed information on releases of PBT chemicals, including dioxin and dioxin-like compounds, can be found in Chapter 3 of this report.

On- and Off-site Releases by State

Nevada, followed by Utah, Arizona, Alaska and Texas were the five states with the largest total on- and off-site releases of chemicals in 2000. The first four states were ranked highest due to reporting by mining facilities in the states. Texas ranked high because of reporting by manufacturing facilities. (See Table ES-3.)

Nevada was the state with the largest total releases reported by new industries. New industry facilities in Nevada reported 1.00 billion pounds of total releases, over 20 percent of all releases reported by new industries. Utah had the second largest total releases reported by new industries, with 849.8 million pounds, over 17 percent of the total releases reported by new industries. Two other states had over 500 million pounds reported by new industries: Arizona with 705.3 million pounds and Alaska with 533.5 million pounds.

Texas was the state with the largest total releases reported by original (manufacturing) industries. Manufacturing industry facilities in Texas reported 245.8 million pounds of total releases, almost 11 percent of all releases reported by the manufacturing industries. Pennsylvania, Ohio, Louisiana and Indiana all had over 130 million pounds of releases reported by manufacturing industries, each representing about 6 percent of total releases by manufacturing industries in 2000. Manufacturing industry facilities in Pennsylvania reported 139.3 million pounds, those in Ohio reported 137.1 million pounds, those in Louisiana reported 135.2 million pounds and those in Indiana reported 134.3 million pounds.

Waste Management Data, 2000

All TRI Chemicals

A total of 37.89 billion pounds of TRI chemicals in production-related waste was reported as managed during 2000. Nearly 84 percent of the production-related waste in 2000 was managed by manufacturing industry facilities. Metal mines reported another 9 percent, and electric utilities reported managing just over 4 percent. (See Table ES-4 and Figure ES-2.)

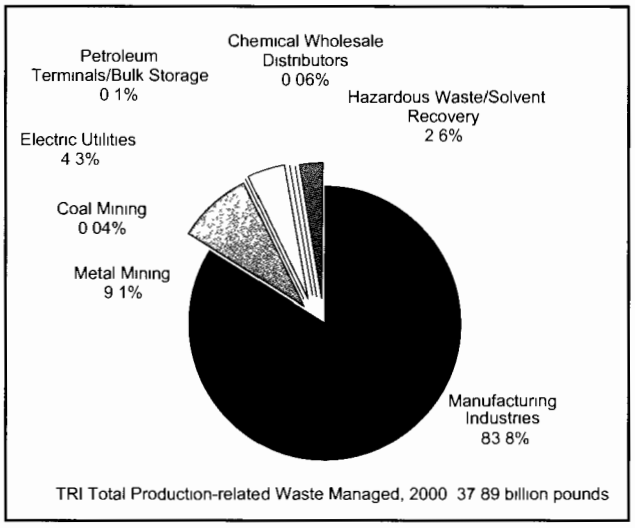
Over 14.78 billion pounds of total production-related waste were treated on-site in 2000, representing 39 percent of all production-related waste. For manufacturing industries, waste treated on-site represented 43 percent of their reported production-related waste and recycled on-site represented 30 percent. Metal mining reported the largest amount of production-related waste of the new industries; 91 percent of this industry's waste was released on- or off-site. Electric utilities, the new industry sector with the second largest production-related waste, released (on- and off-site) 70 percent of its production-related waste.

Table ES-3: TRI Total Releases by State, Original (Manufacturing) and New Industries, 2000

State	Original Industries		New Industries		All TRI Industries	
	Pounds	Rank	Pounds	Rank	Pounds	Rank
Alabama	77,329,585	9	73,307,119	11	150,636,704	12
Alaska	1,976,440	47	533,512,830	4	535,489,271	4
American Samoa	16,780	53	0	--	16,780	55
Arizona	39,383,505	22	705,336,645	3	744,720,149	3
Arkansas	47,564,128	19	3,870,334	45	51,434,462	29
California	39,960,263	21	35,649,083	23	75,609,346	27
Colorado	6,932,142	39	23,668,364	27	30,600,506	37
Connecticut	6,384,133	41	2,362,469	47	8,746,602	47
Delaware	8,240,553	38	5,360,453	44	13,601,006	43
District of Columbia	13,257	54	53,008	52	66,265	54
Florida	74,234,577	10	69,422,519	15	143,657,096	14
Georgia	61,702,191	13	60,506,600	18	122,208,791	18
Guam	0	--	224,283	50	224,283	53
Hawaii	501,163	51	772,808	48	1,273,971	50
Idaho	25,301,075	29	51,367,069	22	76,668,144	26
Illinois	94,014,634	8	56,326,276	19	150,340,910	13
Indiana	134,272,453	5	69,824,616	14	204,097,069	8
Iowa	33,584,800	24	9,840,738	37	43,425,537	32
Kansas	28,697,983	26	9,649,399	38	38,347,383	33
Kentucky	40,702,871	20	60,728,061	17	101,430,933	20
Louisiana	135,215,670	4	19,306,965	30	154,522,635	11
Maine	10,371,598	37	225,806	49	10,597,403	45
Maryland	15,722,576	35	29,471,717	25	45,194,293	31
Massachusetts	5,670,598	42	7,326,029	41	12,996,627	44
Michigan	59,973,529	14	80,216,465	9	140,189,994	15
Minnesota	19,532,793	32	13,470,424	32	33,003,217	34
Mississippi	64,402,242	11	16,681,199	31	81,083,440	24
Missouri	58,417,546	16	72,539,700	12	130,957,247	16
Montana	51,864,792	18	70,284,647	13	122,149,439	19
Nebraska	21,144,939	31	8,916,445	40	30,061,384	38
Nevada	4,457,939	43	1,003,811,775	1	1,008,269,713	1
New Hampshire	2,855,010	45	3,305,851	46	6,160,861	48
New Jersey	18,499,140	33	10,511,310	35	29,010,449	39
New Mexico	839,391	49	124,369,822	6	125,209,213	17
New York	30,389,315	25	30,146,954	24	60,536,268	28
North Carolina	61,930,420	12	95,349,390	7	157,279,810	10
North Dakota	2,228,963	46	21,971,456	28	24,200,419	40
Northern Marianas	0	--	7,990	54	7,990	56
Ohio	137,075,843	3	145,944,153	5	283,019,996	6
Oklahoma	23,679,590	30	9,323,277	39	33,002,867	35
Oregon	26,990,431	27	55,169,231	21	82,159,662	23
Pennsylvania	139,337,978	2	86,574,799	8	225,912,777	7
Puerto Rico	6,403,284	40	12,211,705	33	18,614,988	42
Rhode Island	1,198,732	48	76,818	51	1,275,550	49
South Carolina	59,046,658	15	20,322,166	29	79,368,824	25
South Dakota	3,977,765	44	5,627,988	43	9,605,753	46
Tennessee	98,979,347	7	63,876,540	16	162,855,887	9
Texas	245,761,545	1	55,757,413	20	301,518,958	5
Utah	106,141,261	6	849,800,537	2	955,941,798	2
Vermont	401,956	52	0	--	401,956	52
Virgin Islands	654,616	50	31,174	53	685,790	51
Virginia	57,791,987	17	24,402,215	26	82,194,202	22
Washington	26,066,915	28	5,640,960	42	31,707,875	36
West Virginia	17,529,931	34	80,183,672	10	97,713,602	21
Wisconsin	37,918,089	23	11,760,631	34	49,678,719	30
Wyoming	11,114,777	36	10,016,671	36	21,131,448	41
Total	**2,284,399,698**		**4,816,416,567**		**7,100,816,264**	

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI facilities that reported the amount as an on-site release

Figure ES-2: TRI Total Production-related Waste Managed, Original (Manufacturing) and New Industries, 2000



Note: Data are from Section 8 of Form R for year indicated

PBT Chemicals

Production-related waste for PBT chemicals totaled 71.6 million pounds for 2000. Almost two-thirds of the waste was treated on-site, another 17 percent was released on- and off-site, 11 percent was burned for energy recovery on-site, and 5 percent was recycled on-site. (See Table ES-5.)

Almost 43.0 million pounds of production-related waste of polycyclic aromatic compounds, representing 60 percent of all production-related waste of PBT chemicals, was reported in 2000. Almost 60 percent of the production-related waste of polycyclic aromatic compounds was treated on-site. Another 18 percent was burned for energy recovery on-site and 13 percent was released on- and off-site.

Production-related waste of polychlorinated biphenyls (PCBs) was 13.7 million pounds, constituting 19 percent of all production-related waste of PBT chemicals in 2000. Almost 87 percent of the production-related waste of polychlorinated biphenyls was treated on-site. Production-related waste of mercury and mercury compounds was 4.9 million pounds, representing almost 7 percent of all production-related waste of PBT chemicals in 2000. Most (83 percent) of the production-related waste of mercury and mercury compounds was released on- and off-site.

Production-related waste for the dioxin and dioxin-like compounds totaled 393,963 grams for 2000. Dioxin and dioxin-like compounds are reported in grams and subject to a lower reporting threshold (0.1 grams) than the other PBT chemicals. Two-thirds (63 percent or 249,513 grams) of the total production-related waste of dioxin and dioxin-like

Table ES-4: Quantities of TRI Chemicals in Waste by Industry, Original (Manufacturing) and New Industries, 2000

		Recycled		Energy Recovery		Treated				
SIC Code	Industry	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-production-related Waste Managed Pounds
20-39	Manufacturing Industries	9,653,794,985	2,159,966,719	2,686,643,776	549,039,983	13,778,146,072	571,131,526	2,335,337,556	31,734,060,618	39,973,193
10	Metal Mining	32,398,053	2,042,398	0	0	258,763,697	166,274	3,138,140,726	3,431,511,148	219,374,009
12	Coal Mining	35,718	7,774	0	0	358,555	0	15,985,805	16,387,852	2,646,699
491/493	Electric Utilities	94,645	7,231,764	25,745	13,607	481,671,522	370,726	1,150,350,804	1,639,758,814	328,780
5169	Chemical Wholesale Distributors	7,548,921	153,469	0	9,957,310	574,681	3,028,130	1,517,566	22,780,077	170,919
5171	Petroleum Terminals/Bulk Storage	27,082,736	1,729,889	34,706	123,547	7,176,661	441,525	3,976,827	40,565,892	86,622
4953/7389	Hazardous Waste/Solvent Recovery	128,391,137	22,011,626	6,985,191	256,029,724	254,270,231	43,726,873	289,719,497	1,001,134,279	1,498,318
	Total	9,849,346,195	2,193,143,639	2,693,689,418	815,164,171	14,780,961,420	618,865,054	6,935,028,782	37,886,198,679	264,078,540

Note: Data are from Section 8 of Form R for year indicated

Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

One facility, Phelps Dodge Miami of Claypool, AZ, that reported under SIC code 33 and SIC code 10 in 2000 and previous years has been included in the new industry category SIC code 10 for the purpose of this analysis

compounds were treated on-site with most of the remaining released on- and off-site (105,710 grams).

More detailed information on releases and other waste management of PBT chemicals, including dioxin and dioxin-like compounds, can be found in Chapter 3 of this report.

Waste Management by State

Facilities in Louisiana, followed by those in Texas, Alabama, Illinois and Nevada, reported the largest amounts of production-related waste in 2000. The first four states ranked highest because of facilities in the original industries and Nevada ranked fifth because of facilities in the new industries. (See Table ES-6.)

Louisiana was the state with the largest quantity of production-related waste reported by original industries. Original industry facilities in Louisiana reported 9.39 billion pounds of production-related waste, almost 30 percent of all production-related waste reported by original industries in 2000. Texas, with 4.4 billion pounds of production-related waste from original industries, represented almost 14 percent of the total for original industries. Three other states also reported more than one billion pounds of production-related waste from original industries: Alabama with 2.81 billion pounds, Illinois with 1.51 billion pounds and Pennsylvania with 1.12 billion pounds.

Nevada was the state with the largest quantity of production-related waste reported by new industries. New industry facilities in Nevada reported 1.27 billion pounds of production-related waste, over 20 percent of all production-related waste from new industry facilities in 2000. Three other states had more than 500 million pounds of production-related waste reported by new industries: Arizona with 722.2 million pounds, Utah with 672.4 million pounds and Alaska with 534.2 million pounds.

Table ES-5: Quantities of TRI Chemicals in Waste, PBT Chemicals, 2000

CAS Number	Chemical	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-production-related Waste Managed Pounds
--	**Dioxin and Dioxin-like compounds***	9 81	0 01	0 04	4 40	550 18	71.16	233.09	868 69	59 14
--	*Dioxin and dioxin-like compounds (in grams)**	*4,448 559*	*5 393*	*19 698*	*1,994 612*	*249,513 356*	*32,271 529*	*105,709 934*	*393,963 081*	*26,821 006*
	Mercury and Mercury Compounds	**646,940 05**	**161,929 47**	**77 73**	**126.01**	**19,768 28**	**5,864.61**	**4,041,157.67**	**4,875,863.82**	**18,143 88**
7439-97-6	Mercury	301,682 87	64,712 99	67 73	69 01	365 53	5,334 76	87,957 08	460,189 97	4,903 71
--	Mercury compounds	345,257 18	97,216 48	10 00	57 00	19,402 75	529 84	3,953,200 59	4,415,673 84	13,240 17
	Polycyclic Aromatic Compounds	**2,932,858 97**	**622,842 53**	**7,570,145 81**	**212,142.99**	**25,600,382 12**	**257,264 86**	**5,744,191 79**	**42,939,829.07**	**64,717 07**
191-24-2	Benzo(g,h,i)perylene	100,105 08	9,925 22	1,804,355 26	5,656 33	1,451,368 24	2,665 42	167,216 09	3,541,291 65	639.53
--	Polycyclic aromatic compounds	2,832,753 89	612,917 31	5,765,790 55	206,486 66	24,149,013 88	254,599 44	5,576,975 70	39,398,537 42	64,077 54
1336-36-3	**Polychlorinated Biphenyls (PCBs)**	**358 00**	**752 65**	**1,410 77**	**10,517 00**	**11,906,010 41**	**288,785 81**	**1,481,214 78**	**13,689,049.42**	**22,122 52**
	Pesticides	**11,501.00**	**0 00**	**1,569 00**	**983 00**	**2,312,740 17**	**140,172 19**	**87,061.74**	**2,554,027 10**	**45.00**
309-00-2	Aldrin	0 00	0 00	0 00	0 00	82,504 75	283.00	2,345 32	85,133 07	0 00
57-74-9	Chlordane	0 00	0 00	230 00	0 00	812,322 92	5,686 05	9,010 26	827,249 23	0 00
76-44-8	Heptachlor	0 00	0 00	42 00	0 00	237,739 73	3,773 30	2,394 03	243,949 06	0 00
465-73-6	Isodrin	0 00	0 00	0 00	0 00	6,603 84	0 00	3 00	6,606 84	0 00
72-43-5	Methoxychlor	0 00	0 00	225 00	755 00	290,474 16	431.60	2,682 64	294,568 40	0 00
40487-42-1	Pendimethalin	4,000 00	0 00	0 00	0 00	656,145 00	19,602 00	31,358 55	711,105 55	0 00
8001-35-2	Toxaphene	0 00	0 00	1,072 00	0 00	210,240 69	589 24	6,008 47	217,910 40	0 00
1582-09-8	Trifluralin	7,501 00	0 00	0 00	228 00	16,709 08	109,807 00	33,259 47	167,504 55	45 00
	Other PBTs	**6,605.50**	**12,450.00**	**140,662 00**	**58,434 00**	**6,504,174.17**	**28,488 96**	**839,475.17**	**7,590,289 80**	**21,754.65**
118-74-1	Hexachlorobenzene	6,000 50	12,039 00	140,662 00	56,585 00	6,154,926 17	19,461 15	48,420 58	6,438,094 40	21,752 30
608-93-5	Octachlorostyrene	0 00	0 00	0 00	0 00	19 00	0 00	585 20	604 20	0 00
79-94-7	Pentachlorobenzene	40 00	401 00	0 00	0 00	342,267 00	1,390 81	3,326 28	347,425 09	2 35
29082-74-4	Tetrabromobisphenol A	565 00	10 00	0 00	1,849 00	6,962 00	7,637 00	787,143 11	804,166 11	0 00
	Total	**3,598,273.32**	**797,974 66**	**7,713,865 36**	**282,207 40**	**46,343,625.33**	**720,647.59**	**12,193,334.24**	**71,649,927 90**	**126,842 26**

Note: Data are from Section 8 of Form R for year indicated

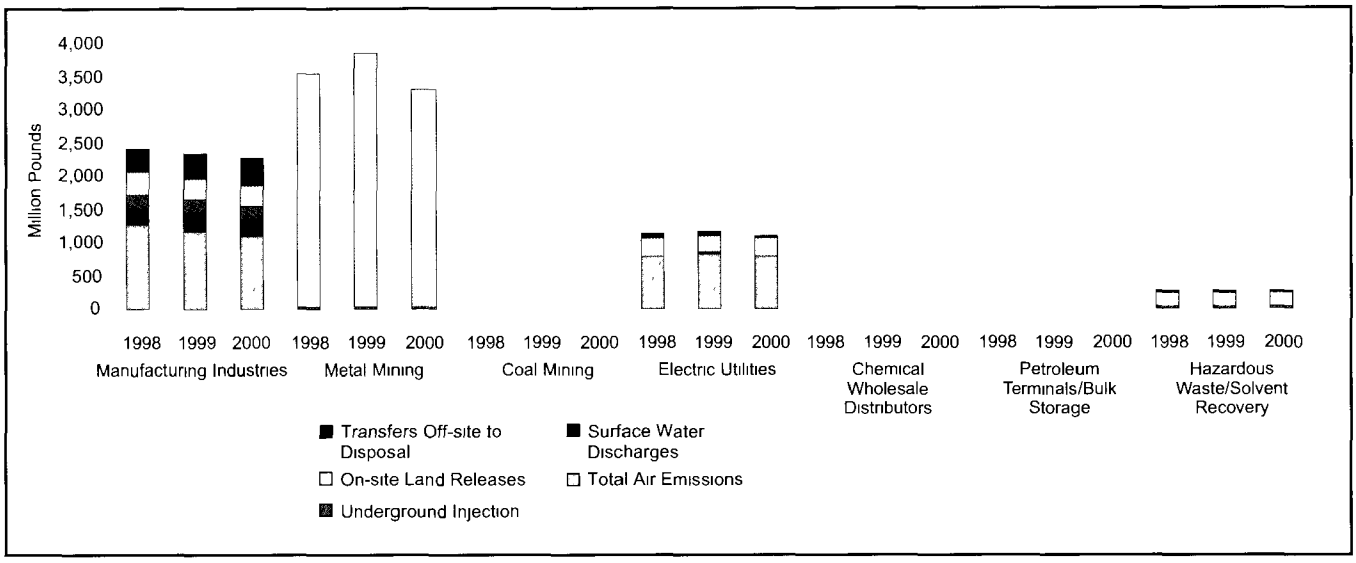
* The chemical category dioxin and dioxin-like compounds is reported in grams Where the category dioxin and dioxin-like compounds is shown on a table with other TRI chemicals, it is presented in pounds The grams are converted to pounds by multiplying by 0 002205

Table ES-6: TRI Total Production-related Waste by State, Original (Manufacturing) and New Industries, 2000

State	Original Industries		New Industries		All TRI Industries	
	Pounds	Rank	Pounds	Rank	Pounds	Rank
Alabama	2,808,342,440	3	89,020,397	18	2,897,362,837	3
Alaska	4,476,547	50	534,158,062	4	538,634,609	17
American Samoa	16,780	54	0	--	16,780	55
Arizona	173,627,053	29	722,224,982	2	895,852,035	10
Arkansas	382,791,579	20	83,798,618	20	466,590,197	20
California	385,346,048	19	85,273,713	19	470,619,761	19
Colorado	76,351,789	39	27,815,907	33	104,167,696	42
Connecticut	151,594,911	30	5,488,691	46	157,083,602	35
Delaware	146,640,101	31	5,969,759	45	152,609,860	36
District of Columbia	21,150	53	53,228	53	74,378	54
Florida	277,332,292	26	115,551,203	13	392,883,495	26
Georgia	448,129,555	15	65,180,615	23	513,310,170	18
Guam	0	--	224,641	51	224,641	53
Hawaii	1,011,836	52	770,278	49	1,782,114	52
Idaho	68,972,405	40	51,577,580	26	120,549,985	39
Illinois	1,511,729,126	4	114,910,108	14	1,626,639,234	4
Indiana	888,007,246	6	137,168,296	10	1,025,175,542	9
Iowa	437,436,722	16	10,279,437	42	447,716,159	23
Kansas	282,542,381	25	13,718,505	40	296,260,886	30
Kentucky	612,488,077	10	152,069,826	7	764,557,903	13
Louisiana	9,391,988,312	1	24,609,743	34	9,416,598,055	1
Maine	88,580,552	37	264,456	50	88,845,008	44
Maryland	104,253,919	35	37,251,656	31	141,505,575	38
Massachusetts	93,304,125	36	10,049,835	43	103,353,960	43
Michigan	519,281,599	14	142,970,573	8	662,252,171	15
Minnesota	324,857,821	23	19,397,053	36	344,254,874	29
Mississippi	385,475,871	18	17,490,460	37	402,966,331	24
Missouri	541,233,915	13	81,638,267	21	622,872,181	16
Montana	106,742,931	34	72,821,892	22	179,564,822	33
Nebraska	60,569,098	41	45,682,295	27	106,251,394	41
Nevada	31,037,975	44	1,266,117,881	1	1,297,155,855	5
New Hampshire	48,570,893	42	3,277,937	47	51,848,829	45
New Jersey	373,411,703	21	91,176,534	17	464,588,237	22
New Mexico	35,380,598	43	131,791,362	11	167,171,961	34
New York	426,618,231	17	38,895,206	30	465,513,437	21
North Carolina	699,734,269	9	102,122,289	16	801,856,558	12
North Dakota	7,924,738	49	23,172,365	35	31,097,102	47
Northern Marianas	0	--	7,990	54	7,990	56
Ohio	817,018,936	8	293,814,165	5	1,110,833,101	8
Oklahoma	129,063,399	33	16,611,572	38	145,674,972	37
Oregon	146,224,732	32	55,277,299	24	201,502,031	31
Pennsylvania	1,121,034,762	5	140,718,372	9	1,261,753,134	6
Puerto Rico	83,472,279	38	32,226,907	32	115,699,186	40
Rhode Island	29,147,967	45	932,546	48	30,080,513	48
South Carolina	832,475,366	7	54,813,720	25	887,289,086	11
South Dakota	8,494,367	48	8,856,631	44	17,350,998	50
Tennessee	588,507,674	11	111,373,252	15	699,880,926	14
Texas	4,376,025,985	2	207,489,081	6	4,583,515,066	2
Utah	563,191,609	12	672,402,031	3	1,235,593,640	7
Vermont	3,559,034	51	0	--	3,559,034	51
Virgin Islands	17,360,305	46	64,284	52	17,424,589	49
Virginia	351,339,431	22	45,143,948	28	396,483,379	25
Washington	183,523,467	28	12,513,077	41	196,036,544	32
West Virginia	260,868,910	27	118,021,620	12	378,890,530	27
Wisconsin	310,094,086	24	42,578,567	29	352,672,652	28
Wyoming	16,833,722	47	15,309,347	39	32,143,069	46
Total	**31,734,060,618**		**6,152,138,062**		**37,886,198,679**	

Note: Data are from Section 8 of Form R for 2000

Figure ES-3: TRI Total Releases, Original (Manufacturing) and New Industries, 1998-2000



Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI facilities that reported the amount as an on-site release

Total On-site and Off-site Releases 1998-1999

From 1999 to 2000, total TRI releases by all industries fell by 644.4 million pounds or over 8 percent. In the three year period, from 1998 to 2000, the decline was 409.3 million pounds total, a 5.5 percent decrease. The data used to compare 1998, 1999 and 2000 do not include the PBT chemicals or vanadium or vanadium compounds since certain PBT chemicals and vanadium compounds were added to the TRI list of chemicals in 2000 and the reporting definition for vanadium changed. Also, the reporting thresholds for all PBT chemicals changed. (See Table ES-7 and Figure ES-3.)

The largest decreases from 1999 to 2000 came in the metal mining industry: releases decreased by

Table ES-7: TRI Total Releases by Industry, Original (Manufacturing) and New Industries, 1998-2000

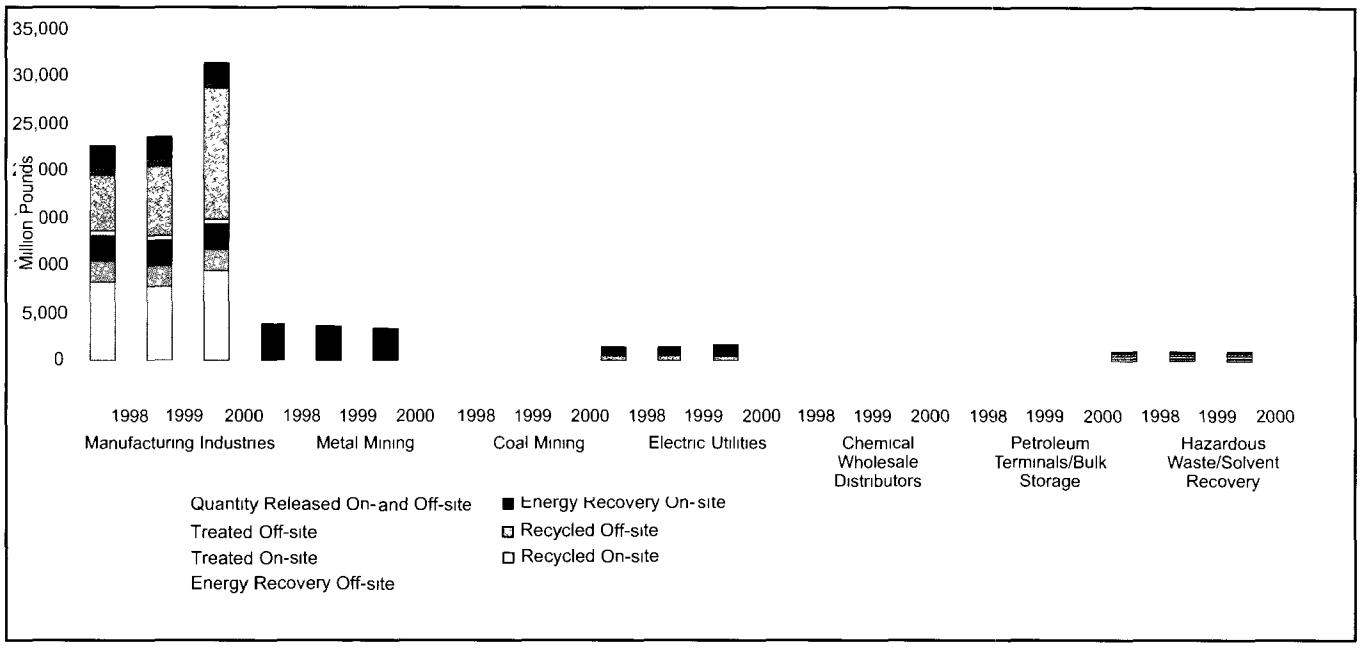
SIC Code	Industry	Total On- and Off-site Releases 1998 Pounds	1999 Pounds	2000 Pounds	Change 1999-2000 Pounds	Change 1999-2000 Percent	Change 1998-2000 Pounds	Change 1998-2000 Percent
20-39	Manufacturing Industries	2,421,337,219	2,328,075,238	2,267,118,555	-60,956,683	-2.6	-154,218,664	-6 4
10	Metal Mining	3,563,140,043	3,866,021,504	3,310,956,485	-555,065,019	-14 4	-252,183,558	-7 1
12	Coal Mining	13,392,904	10,737,088	15,327,860	4,590,772	42.8	1,934,956	14 4
491/493	Electric Utilities	1,130,449,946	1,157,870,693	1,120,615,348	-37,255,345	-3 2	-9,834,598	-0 9
5169	Chemical Wholesale Distributors	1,520,440	1,999,646	1,611,790	-387,856	-19 4	91,350	6.0
5171	Petroleum Terminals/Bulk Storage	4,511,772	4,333,895	3,725,152	-608,743	-14 0	-786,620	-17 4
4953/7389	Hazardous Waste/Solvent Recovery	276,048,273	276,499,126	281,782,838	5,283,711	1 9	5,734,564	2.1
	Total	**7,410,400,596**	**7,645,537,190**	**7,001,138,027**	**-644,399,163**	**-8.4**	**-409,262,569**	**-5.5**

Note Does not include PBT chemicals, vanadium and vanadium compounds **On-site Releases** are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. **Off-site Releases** do not include transfers to disposal sent to other TRI facilities that reported the amount as an on-site release

Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

One facility, Phelps Dodge Miami of Claypool, AZ, that reported under SIC code 33 and SIC code 10 in 2000 and previous years has been included in the new industry category SIC code 10 for the purpose of this analysis

Figure ES-4: TRI Production-related Waste Managed, Original (Manufacturing) and New Industries, 1998-2000



Note: Does not include PBT chemicals, vanadium and vanadium compounds Data are from Section 8 of Form R for year indicated

almost 555.1 million pounds. Metal mining releases declined by 14 percent, while the manufacturing industries decrease was less than 3 percent. Chemical wholesale distributors saw the sharpest percentage drop, 19 percent, from 1999-2000. Coal mining, the only industry group to report an increase from 1999 to 2000, increased by 4.6 million pounds, almost 43 percent.

For the three year period, 1998-2000, the decreases in releases were less than from 1999 to 2000 for metal mining and electric utilities. Metal mining reported decreases in releases of 252.2 million pounds, or 7 percent from 1998-2000 and electric utilities reported decreases in releases of 9.8 million pounds, less than one percent. Both coal mining and the hazardous waste/solvent recovery industries reported increases in releases for the 1998-2000 period. Coal mining's increase was 14 percent (1.9 million pounds) and hazardous waste/solvent recovery industries reported an increase in releases of 2 percent (5.7 million pounds). The manufacturing industries, however, recorded decreases in releases throughout the 1998-2000 period, with a decrease of 154.2 million pounds or 6 percent.

Waste Management Data, 1998-2000

Overall, total production-related waste reported by all TRI industries increased by 26 percent from 1999-2000, a net increase of 7.77 billion pounds. The original industries saw an increase of 34 percent or 8.03 billion pounds, while the new industries saw a decrease of 4 percent or 267.5 million pounds. The decrease for the new industries was mainly in the quantity released on- and off-site, which decreased by 292.7 million pounds or 6 percent, and the amount treated off-site, which decreased by 24.9 million pounds or 34 percent. (See Table ES-8 and Figure ES-4.)

The increase for the original industries occurred in the amount treated on-site, which increased by 6.33 billion pounds or 85 percent. One facility in Louisiana reported an increase of 5.73 billion pounds treated on-site. The amount of production-related waste recycled on-site also increased, by 1.89 billion pounds or 24 percent. One facility in Alabama reported for the first time in 2000 a total of 2.08 billion pounds recycled on-site. The quantity of waste released on- and off-site for the original

Table ES-8: Quantities of TRI Chemicals in Waste by Waste Management Activity, Original (Manufacturing) and New Industries, 1998-2000

Waste Management Activity	Original Industries						
	1998	1999	2000	Change 1999-2000		Change 1998-2000	
	Pounds	Pounds	Pounds	Pounds	Percent	Pounds	Percent
Recycled On-site	8,385,540,278	7,760,371,765	9,648,793,825	1,888,422,060	24.3	1,263,253,547	15.1
Recycled Off-site	2,104,267,249	2,170,640,184	2,155,918,552	-14,721,631	-0 7	51,651,304	2 5
Energy Recovery On-site	2,733,353,748	2,807,080,971	2,678,931,507	-128,149,464	-4.6	-54,422,241	-2 0
Energy Recovery Off-site	490,658,304	513,659,423	548,777,370	35,117,947	6 8	58,119,066	11 8
Treated On-site	5,959,218,668	7,426,442,587	13,755,052,371	6,328,609,784	85.2	7,795,833,703	130.8
Treated Off-site	596,249,888	548,518,807	570,596,827	22,078,020	4 0	-25,653,060	-4.3
Quantity Released On- and Off-site	2,498,382,894	2,416,857,735	2,318,298,838	-98,558,896	-4.1	-180,084,056	-7.2
Total Production-related Waste Managed	**22,767,671,028**	**23,643,571,472**	**31,676,369,292**	**8,032,797,820**	**34.0**	**8,908,698,263**	**39.1**
Non-production-related Waste Managed	26,278,484	305,689,636	39,828,556	-265,861,080	-87.0	13,550,072	51.6
Waste Management Activity	**New Industries**						
	1998	**1999**	**2000**	**Change 1999-2000**		**Change 1998-2000**	
	Pounds	Pounds	Pounds	Pounds	Percent	Pounds	Percent
Recycled On-site	203,076,708	199,404,215	195,466,701	-3,937,514	-2.0	-7,610,007	-3.7
Recycled Off-site	36,994,728	36,793,121	32,838,059	-3,955,062	-10 7	-4,156,669	-11 2
Energy Recovery On-site	11,399,201	10,762,603	7,044,038	-3,718,565	-34.6	-4,355,163	-38.2
Energy Recovery Off-site	412,406,220	270,806,332	266,104,594	-4,701,738	-1 7	-146,301,626	-35.5
Treated On-site	808,546,067	912,997,890	979,399,297	66,401,407	7.3	170,853,230	21.1
Treated Off-site	90,263,036	72,354,931	47,475,922	-24,879,009	-34 4	-42,787,114	-47 4
Quantity Released On- and Off-site	4,999,898,097	4,813,430,648	4,520,758,586	-292,672,062	-6.1	-479,139,511	-9.6
Total Production-related Waste Managed	**6,562,584,057**	**6,316,549,740**	**6,049,087,197**	**-267,462,543**	**-4.2**	**-513,496,860**	**-7.8**
Non-production-related Waste Managed	1,611,653	506,552,315	220,800,646	-285,751,669	-56.4	219,188,993	13,600.3
Waste Management Activity	**All TRI Industries**						
	1998	**1999**	**2000**	**Change 1999-2000**		**Change 1998-2000**	
	Pounds	Pounds	Pounds	Pounds	Percent	Pounds	Percent
Recycled On-site	8,588,616,986	7,959,775,980	9,844,260,526	1,884,484,546	23.7	1,255,643,540	14.6
Recycled Off-site	2,141,261,977	2,207,433,305	2,188,756,611	-18,676,693	-0 8	47,494,635	2.2
Energy Recovery On-site	2,744,752,949	2,817,843,574	2,685,975,545	-131,868,029	-4.7	-58,777,404	-2.1
Energy Recovery Off-site	903,064,524	784,465,755	814,881,964	30,416,209	3.9	-88,182,560	-9.8
Treated On-site	6,767,764,735	8,339,440,477	14,734,451,668	6,395,011,191	76.7	7,966,686,933	117.7
Treated Off-site	686,512,924	620,873,738	618,072,750	-2,800,989	-0 5	-68,440,174	-10 0
Quantity Released On- and Off-site	7,498,280,991	7,230,288,383	6,839,057,424	-391,230,959	-5.4	-659,223,567	-8.8
Total Production-related Waste Managed	**29,330,255,085**	**29,960,121,212**	**37,725,456,489**	**7,765,335,277**	**25.9**	**8,395,201,403**	**28.6**
Non-production-related Waste Managed	27,890,137	812,241,951	260,629,202	-551,612,749	-67.9	232,739,065	834.5

Note. Does not include PBT chemicals, vanadium and vanadium compounds Data are from Section 8 of Form R for year indicated

Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

One facility, Phelps Dodge Miami of Claypool, AZ, that reported under SIC code 33 and SIC code 10 in 2000 and previous years has been included in the new industry category SIC code 10 for the purpose of this analysis

industries decreased from 1999 to 2000 by 98.6 million pounds, or 4 percent.

The total production-related waste managed during the three-year period 1998-2000 increased by almost 29 percent, a net increase of 8.40 billion pounds. The original industries saw a 39 percent increase, or 8.91 billion pounds. Two facilities accounted for most of this increase; one facility in Lousiana reported an increase of 5.78 billion pounds from 1999 to 2000 and one facility in Alabama reporting for the first time in 2000 reported a total of 2.10 billion pounds. The new industries saw an 8 percent decline of 513.5 million pounds, from 1998-2000.

From 1998-2000, all types of waste managed decreased for the new industries except for that treated on-site, which increased by 170.9 million pounds or 21 percent. The quantity released on- and off-site by the new industries decreased by 479.1 million pounds or nearly 10 percent. The amount burned for energy recovery off-site decreased by 146.3 million pounds or 35.5 percent.

Original industries also reported decreases from 1998 to 2000 in the quantity released on- and off-site, by 180.1 million pounds or 7 percent. However, the amount treated on-site increased by 7.80 billion pounds or over 130 percent. One facility in Louisiana reported an increase of 5.73 billion pounds treated on-site. The amount recycled on-site also increased by 1.26 billion pounds or 15 percent. One facility in Alabama reported for the first time in 2000 2.08 billion pounds recycled on-site.

Total On-site and Off-site Releases, 1988-2000

For the core set of chemicals from industries that have reported consistently since 1988, total on- and off-site releases decreased by 48 percent between 1988 and 2000, a reduction of 1.55 billion pounds. At the same time, the number of forms submitted also declined, by 4.6 percent. On-site releases decreased by almost 57 percent or 1.58 billion pounds. However, off-site releases increased over this period by almost 7 percent or 27.6 million pounds. (See Table ES-9 and Figure ES-5.)

Table ES-9: Comparison of TRI On-site and Off-site Releases, Original (Manufacturing) Industries, 1988, 1995, 1998-2000

	1988	1995	1998	1999	2000	Change 1988-2000	
	Number	Number	Number	Number	Number	Number	Percent
Total Forms	60,100	61,049	59,042	57,800	57,321	-2,779	-4.6
Form Rs	60,100	56,008	50,754	49,601	48,865	--	--
Form As	--	5,041	8,288	8,199	8,456	--	--
On-site Releases	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Percent
Total Air Emissions	2,180,542,989	1,205,159,279	928,928,863	862,632,766	800,756,085	-1,379,786,904	-63.3
Fugitive Air Emissions	680,408,475	307,072,846	219,337,574	198,457,524	183,898,550	-496,509,925	-73 0
Point Source Air Emissions	1,500,134,514	898,086,433	709,591,289	664,175,242	616,857,536	-883,276,978	-58.9
Surface Water Discharges	41,912,257	17,094,344	17,426,363	14,403,138	14,621,472	-27,290,785	-65 1
Underground Injection	161,910,712	154,738,867	114,708,252	109,328,491	111,331,713	-50,578,999	-31.2
On-site Land Releases	405,807,542	269,871,022	340,391,183	325,046,057	285,580,038	-120,227,504	-29.6
Total On-site Releases	2,790,173,500	1,646,863,512	1,401,454,661	1,311,410,452	1,212,289,308	-1,577,884,192	-56.6
Off-site Releases							
Storage Only*	13,774,065	2,220,372	5,234,408	6,046,121	7,820,720	-5,953,345	-43.2
Solidification/Stabilization**	29,504,218	26,444,178	135,453,510	133,633,858	142,351,513	112,847,295	382 5
Metals and Metal Compounds Only							
Wastewater Treatment (Excluding POTWs)***	4,645,783	3,882,834	2,817,951	6,583,081	6,701,369	2,055,586	44 2
Metals and Metal Compounds Only							
Transfers to POTWs****	9,587,143	2,722,085	3,339,395	3,144,502	3,143,092	-6,444,051	-67 2
Metals and Metal Compounds Only							
Underground Injection	8,734,876	12,129,030	9,783,826	19,895,785	19,009,127	10,274,251	117 6
Landfills/Surface Impoundments	264,707,267	215,580,481	229,176,392	220,705,243	234,977,336	-29,729,931	-11.2
Land Treatment	2,701,526	853,636	536,324	2,853,007	2,174,105	-527,421	-19 5
Other Land Disposal	9,349,634	10,523,661	13,297,507	12,123,026	7,770,612	-1,579,022	-16.9
Other Off-site Management	37,438,997	13,529,710	9,086,260	9,064,895	7,418,660	-30,020,337	-80 2
Transfers to Waste Broker for Disposal	29,723,527	4,746,053	12,301,123	10,821,657	13,648,286	-16,075,241	-54.1
Unknown*****	11,242,692	1,847,406	3,535,558	3,358,968	4,022,510	-7,220,182	-64 2
Total Off-site Releases (Transfers Off-site to Disposal)	421,409,728	294,479,446	424,562,254	428,230,142	449,037,330	27,627,602	6.6
Total On- and Off-site Releases	3,211,583,228	1,941,342,958	1,826,016,915	1,739,640,594	1,661,326,638	-1,550,256,590	-48.3

Note: Does not include delisted chemicals, chemicals added in 1990, 1994 and 1995, aluminum oxide, ammonia, hydrochloric acid, PBT chemicals, sulfuric acid, vanadium and vanadium compounds **On-site Releases** are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-Site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

* Storage only (disposal code M10) indicates that the toxic chemical is sent off-site for storage because there is no known disposal method Amounts reported as transferred to storage only are included as a form of disposal (off-site release) See Box 1-5

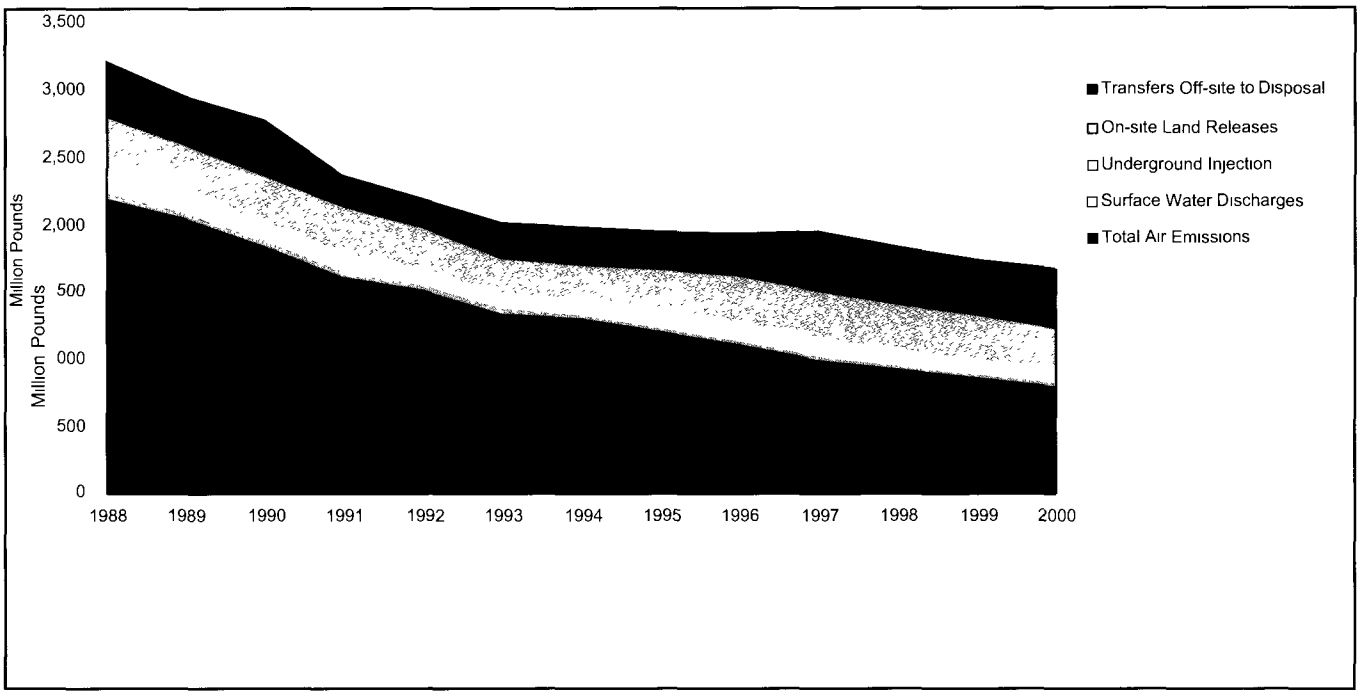
** Beginning in reporting year 1997, transfers to solidification/stabilization of metals and metal compounds (waste treatment code M41) are reported separately from transfers to solidification/stabilization of non-metal TRI chemicals (waste treatment code M40) Because this treatment method prepares a metal for disposal, but does not destroy it, such transfers are included as a form of disposal (off-site release) See Box 1-6 Reports under code M40 of metals and metal compounds have been included in solidification/stabilization of metals and metal compounds in this report

*** Beginning in reporting year 1997, transfers to wastewater treatment (excluding POTWs) of metals and metal compounds (waste treatment code M61) are reported separately from transfers to wastewater treatment of non-metal TRI chemicals (waste treatment code M60) Because wastewater treatment does not destroy metals, such transfers are included as a form of disposal (off-site release) See Box 1-6 Transfers of metals and metal compounds reported under code M60 have been included in transfers of metals and metal compounds to wastewater treatment

**** Reported as discharges to POTWs in Section 6 1 of Form R EPA considers transfers of metals and metal compounds to POTWs as an off-site release because sewage treatment does not destroy the metal content of the waste material

***** Unknown (disposal code M99) indicates that a facility is not aware of the type of waste management used for the toxic chemical that is sent off-site Amounts reported as unknown transfers are treated as a form of disposal (off-site release)

Figure ES-5: Distribution of TRI On-site and Off-site Releases, Original (Manufacturing) Industries, 1988-2000



Note: Does not include delisted chemicals, chemicals added in 1990, 1994 and 1995, aluminum oxide, ammonia, hydrochloric acid, PBT chemicals, sulfuric acid, vanadium and vanadium compounds **On-site Releases** are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

All on-site release categories showed decreases. Air emissions decreased by 63 percent or 1.38 billion pounds. Surface water discharges decreased by 65 percent or 27.3 million pounds. Underground injection decreased by 31 percent or 50.6 million pounds, and on-site land releases fell almost 30 percent or 120.2 million pounds.

The largest increases in off-site releases (transfers to disposal) occurred in solidification/stabilization of metals for subsequent disposal, an increase of 112.8 million pounds or over 382 percent and in off-site underground injection, an increase of 10.3 million pounds or 118 percent. The amount of metals and metal compounds in waste sent for wastewater treatment also increased by 2.1 million pounds or 44 percent. The categories of off-site release with the largest decreases were other off-site management, which decreased by 30.0 million pounds or 80 percent, and disposal in landfills/surface impoundments, which decreased by 29.7 million pounds or 11 percent.

UNDERSTANDING THE USES, SCOPE AND LIMITS OF TRI DATA

While TRI provides the public, industry, and state and local governments an invaluable source of key environmental data, it has some limitations that must be considered when using the data. Although the Agency has expanded the number of industries that must report, the program does not cover all sources of releases and other waste management activities of TRI chemicals. Although TRI is successful in capturing information on a significant portion of toxic chemicals currently being used by covered industry sectors, it does not cover all toxic chemicals or all industry sectors. In addition, facilities that do not meet the TRI threshold levels (those with fewer than 10 full-time employees or those not meeting TRI quantity thresholds) are not required to report. Thus, while the TRI includes 91,513 reports from 23,484 facilities for 2000, the 7.10 billion pounds of on-and off-site releases reported represent only a portion of all toxic chemical releases nationwide.

Furthermore, facilities often report estimated data to TRI, and the program does not mandate that they monitor their releases. Various estimation techniques are used when monitoring data are not available, and EPA has published estimation guidance for the regulated community. Variations between facilities can result from the use of different estimation methodologies. Patterns of releases and other waste management activities can change dramatically from one year to the next. These factors should be taken into account when considering data accuracy and comparability.

TRI reports reflect releases and other waste management activities of chemicals, not exposures of the public to those chemicals. Release estimates alone are not sufficient to determine exposure or to calculate potential adverse effects on human health and the environment. Although additional information is necessary to assess exposure and risk, TRI data can be used to identify areas of potential concern.

TRI data, in conjunction with other information, can be used as a starting point in evaluating exposures that may result from releases and other waste management activities of toxic chemicals. The determination of potential risk depends upon many factors, including the toxicity of the chemical, the fate of the chemical after it is released, the locality of the release, and the populations that are exposed to the chemical after its release.

ACCESSING THE TRI DATA

The TRI data and data release reports may be accessed through the EPA's TRI home page at http://www.epa.gov/tri. The TRI home page also includes other background information on the TRI program and TRI data as well as information on applicable statutes, regulations and guidance.

Chapter 1

Toxics Release Inventory Reporting and the 2000 Public Data Release

Chapter 1
Toxics Release Inventory Reporting and the 2000 Public Data Release

Introduction

Following a fatal chemical-release accident in Bhopal, India, the Emergency Planning and Community Right-to-Know Act (EPCRA) provisions were enacted to promote emergency planning, to minimize the effects of an accident such as occurred at Bhopal, and to provide the public with information on releases of toxic chemicals in their communities.

Section 313 of EPCRA established the Toxics Release Inventory (TRI) Program, a national database that identifies facilities, chemicals manufactured, processed and used at the identified facilities, and the annual amounts of these chemicals released (in routine operations and in accidents and other one-time events) and otherwise managed on- and off-site in waste.

In 1990, Congress passed the Pollution Prevention Act (PPA). Among its requirements was a mandate to expand TRI to include additional information on toxic chemicals in waste and on source reduction and other waste management methods. Beginning in 1991, covered facilities were required to report quantities of TRI chemicals recycled, combusted for energy recovery, and treated on- and off-site. This waste management data has strengthened TRI as a tool for providing information on facilities' handling of TRI chemicals in waste as well as for analyzing progress in reducing releases.

The TRI Program has been a tremendously successful program and the results speak loudly for themselves. The industries that have reported to TRI since its inception have reduced their on- and off-site releases of TRI chemicals by 48 percent or 1.55 billion pounds (for chemicals reportable in all years). Governments—federal, state, and local—have used the TRI to set priorities, measure progress, and target areas of special and immediate concern. The public, our most important customer, has used the TRI data to understand their local environment, to participate in local and national debates about the choices being made that may affect their health and the health of their children and, ultimately, to exert their influence on the outcome of these debates. Given the potential for using TRI data in these ways, it is important for the public to understand the limitations as well as the benefits of TRI data and factors that should be considered before drawing conclusions from the data about risks to human health and the environment. The release estimates alone are not sufficient to determine exposure or to calculate potential adverse effects on human health and the environment. The determination of potential risk depends on many factors, including toxicity, chemical fate after release, release location, and population concentrations.

Since TRI began in 1987, the program has grown. For the reporting year 2000, TRI was expanded to include certain new persistent bioaccumulative toxic (PBT) chemicals. In addition, reporting thresholds were lowered for both the newly-added PBT chemicals and certain PBT chemicals already on the TRI list (see **Chapter 3** for the 2000 PBT Chemicals TRI data). The year 1998 marked the first reporting by seven additional industry sectors: metal mining, coal mining, electrical utilities that combust coal and/or oil, hazardous waste treatment and disposal facilities, chemical wholesale distributors, petroleum bulk stations and terminals, and solvent recovery services (see **Who Must Report?** in this chapter for specific industry identification). Since 1994, federal facilities have been added to TRI and the number of reportable chemicals has nearly doubled.

Now in the second decade of the TRI Program, many challenges in the Right-to-Know Program remain to be met. TRI was designed to be a program that would evolve, over time, to meet the changing needs of an informed and involved public. The program will never be static and will never be "finished." As new chemicals of concern are identified, they will be added. Sectors that appear to contribute significantly to environmental loadings will be added. Data collection will be modified to meet new information needs and access technologies will be developed over time to assure enhanced public access to the TRI data.

2000 PUBLIC DATA RELEASE

This *2000 Toxics Release Inventory Public Data Release* (EPA 260-R-02-003) provides a detailed view of the information collected through TRI. This volume summarizes data collected for calendar year 2000, along with changes since 1999, 1998, 1995, 1991, and 1988. The companion volume, *2000 TRI Public Data Release: State Fact Sheets* (EPA 260-F-02-004) supplies TRI data in greater detail for each state and territory. The on-line TRI Explorer, a Web tool for searching TRI data, available at http://www.epa.gov/triexplorer, includes data collected for all years, including those not found in this report. In addition, the TRI data can be accessed through EPA's Envirofacts data warehouse at http://www.epa.gov/enviro.

The *2000 Toxics Release Inventory Public Data Release* contains six chapters plus an executive summary. This chapter provides background information, important factors, and assumptions that need to be considered when using TRI data. Chapter 2 gives an overview of on- and off-site releases, management of TRI chemicals in waste, and transfers off-site for further waste management for 1998 through 2000. Chapter 3 presents the data for 2000 for the PBT chemicals. Chapter 4 examines 1998 through 2000 reporting by the seven new industries, with comparisons to TRI reporting by all industries. Chapter 5 examines data reported by the original TRI industries, analyzing release and other waste management data for 2000 and for 1995 to 2000. Chapter 5 also summarizes changes in on- and off-site releases since 1988 and in other waste management data since 1991. Data are analyzed at both the national and state level. Chapter 6 presents TRI data for federal facilities.

Appendix A provides data for all reportable chemicals. Appendix B provides data for metals and metal compounds. Appendix C provides information for those TRI chemicals that have been designated as OSHA carcinogens.

TRI REPORTING

Each year, facilities that meet certain thresholds must report their releases and other waste management activities for listed toxic chemicals to EPA and to the state or tribal entity in whose jurisdiction the facility is located. The TRI list for 2000 included more than 600 chemicals and 30 chemical categories. Each facility submits a TRI reporting form for each TRI chemical it has manufactured, processed, or otherwise used during 2000 in amounts exceeding the thresholds (see **How Do Facilities Report?** later in this chapter).

Reports for each calendar year are due by July 1 of the following year. After completion of data entry and data quality assurance activities, the Agency makes the data available to the public in printed reports, in a computer database, and through a variety of other information products. States also make available to the public copies of the forms filed by facilities in their jurisdiction. In addition, some states independently produce a data release report.

Who Must Report?

Facilities in Standard Industrial Classification (SIC) primary codes 20 to 39 have been required to report to TRI since 1987 (see Box 1-1). Federal facilities have been required to report since 1994, regardless of their SIC classification. In May 1997, EPA added seven new industry sectors who began reporting in 1998:

- Metal mining (SIC code 10, except 1011, 1081, and 1094),
- Coal mining (SIC code 12, except 1241),

- Electrical utilities that combust coal and/or oil for the purpose of generating power for distribution in commerce (SIC codes 4911, 4931, and 4939),
- RCRA subtitle C hazardous waste treatment and disposal facilities (in SIC code 4953),
- Chemical wholesale distributors (SIC code 5169),
- Petroleum terminals and bulk storage facilities (SIC code 5171), and
- Solvent recovery services (in SIC code 7389).

Facilities in the specified industries that have the equivalent of 10 or more full-time employees and meet the established thresholds for manufacturing, processing, or "otherwise use" of listed chemicals must report their releases and other waste management quantities (including quantities transferred off-site for further waste management).

For most chemicals, thresholds for manufacturing and processing are currently 25,000 pounds for each listed chemical, while the threshold for otherwise use is 10,000 pounds per chemical. For the group of PBT chemicals these thresholds have been lowered.

Box 1-1 summarizes the requirements that determine whether facilities must report.

What Must Be Reported?

Each year, facilities report to TRI the amounts of toxic chemicals released on-site to air, water, and land and injected underground (Section 5 of TRI Reporting Form R), and the amounts of chemicals transferred off-site for recycling, energy recovery, treatment, and disposal (Section 6 of Form R). They

Box 1-1: Who Must Report to TRI?

A facility must report to TRI if it:

- Conducts manufacturing operations within SIC codes 20 through 39 or, beginning in the 1998 reporting year, if it is in one of the following industries: metal mining, coal mining, electrical utilities that combust coal and/or oil, RCRA Subtitle C hazardous waste treatment and disposal facilities, chemical distributors, petroleum terminals and bulk storage facilities, and solvent recovery services. Also, federal facilities must report to TRI regardless of their SIC code classification;
- Employs 10 or more full-time-equivalent employees; and
- Manufactures or processes more than 25,000 pounds or otherwise uses more than 10,000 pounds of any listed chemical during the calendar year, except for PBT chemicals where the thresholds are 0.1 gram for dioxin and dioxin-like compounds, and 10 or 100 pounds for other PBT chemicals.

Standard Industrial Classification (SIC) codes are used throughout the federal government to classify economic activity by industry. Facilities in the manufacturing sectors-that is, SIC codes 20 through 39-have been required to report since the TRI program began. Federal facilities have been required to report to TRI since 1994 regardless of their SIC code. In 1998, seven additional industries began reporting.

On TRI Form Rs and on TRI Form A certification statements, facilities report the four-digit SIC codes that define their operations. A facility might report, for example, SIC code 2873, nitrogenous fertilizers. Industries are grouped into broader categories at the three-digit and two-digit SIC code levels. For example, at the two-digit level it falls into the chemicals and allied products major group, SIC code 28. Producers of nitrogenous fertilizers have been required to report to TRI since 1987. A facility that mines silver ore (SIC code 1044, in the gold and silver ores group SIC code 104, in the metal mining major group SIC code 10) was required to report to TRI beginning in 1998. A solvent recovery facility in SIC code 7389 was also required to report beginning in 1998, although other types of economic activity in that SIC code (miscellaneous business services) do not report to TRI.

Tables in this report present data by industry sector (two-digit SIC code). Industrial facilities often conduct interrelated operations that result in products or services which are classified in different SIC codes. In general, TRI forms with multiple SIC codes are analyzed in Chapter 5. (Box 5-2 explains the treatment of multiple codes.) If, however, a facility reported for the first time in 1998 with SIC codes for both new and original industries, it is included in the analyses in Chapter 4 under the new industry code. Those federal facilities reporting activities within the new industry sectors are included in the new industries, otherwise federal facilities are included in the original industries.

also report production-related waste management information on quantities recycled, combusted for energy recovery, treated, or released or otherwise disposed of, both on- and off-site, and catastrophic or other one-time releases (Section 8 of Form R). To some extent, data in Sections 5, 6, and 7 of Form R and those in Section 8 represent a different view of essentially the same information.

Facilities provide specific identifying information, such as:

- Name
- Location
- Type of business
- Contact names
- Name of parent company
- Environmental permit numbers

They also provide information about the manufacture, process, and otherwise use of the listed chemical at the facility and the maximum amount of the chemical on-site during the year. Facilities provide information about methods used to treat waste streams containing the toxic chemicals at the site and the efficiencies of those treatment methods. In addition to information about the amount of toxic chemicals sent off-site for waste management, facilities also must specify the destination of these transfers. Beginning with the 1991 reports, facilities were required to provide information about source reduction and other pollution prevention activities, along with the quantities managed in waste by activities such as recycling. Companies must provide a production index that can help relate changes in reported quantities of toxic chemicals in waste managed to changes in production.

These additional data elements facilitate tracking of industry progress in reducing waste generation and moving towards safer waste management alternatives. While current TRI data cannot provide an absolute measure of pollution prevention, the data can provide insights into the complete toxics cycle.

Box 1-2 summarizes what facilities must report to TRI. See **TRI Releases and Waste Management: Data Analyzed in the *2000 TRI Public Data Release*** later in this chapter for more detail on the data that facilities report, as those data are presented and analyzed throughout this book.

How Do Facilities Report?

TRI facilities may file their TRI reports either electronically, using the TRI reporting software, or in hard copy. Each facility submits a Form R for each TRI chemical for which it meets the reporting requirements. Starting with the 1995 reporting year,

Box 1-2: What Must Be Reported to TRI?

Information reported by facilities includes:

- Basic information identifying the facility,
- Name and telephone number of a contact person,
- Environmental permits held,
- Amounts of each listed chemical released to the environment at the facility,
- Amounts of each chemical sent from the facility to other locations for recycling, energy recovery, treatment, or disposal,
- Amounts of each chemical recycled, burned for energy recovery, or treated at the facility,
- Maximum amount of chemical present on-site at the facility during the year,
- Types of activities conducted at the facility involving the toxic chemical, and
- Source reduction activities.

facilities with lower levels of reportable amounts that do not manufacture, process, or otherwise use more than 1 million pounds of the chemical can file a much shorter certification statement, Form A.

Form R

The Form R is the reporting form that must be submitted annually by the owner or operator of a covered facility. The reports are submitted on or before July 1 and cover activities that occurred at the facility during the previous calendar year. EPA provides the reporting forms with instructions and technical guidance on how to calculate toxic chemical releases or emissions from facilities. *The Toxic Chemical Release Inventory Reporting Forms and Instructions* are available on the Internet at http://www.epa.gov/tri.

Form A

While expanding chemical and industry coverage, EPA has also provided a burden-reducing option for facilities with relatively low quantities of listed toxic chemicals in waste. Beginning in 1995, as the expanded chemical list went into effect, facilities whose total annual reportable amount of a listed toxic chemical does not exceed 500 pounds can apply a higher activity threshold in determining their reporting obligations. The total annual reportable amount is defined as the sum of the following: quantities released (including disposal), recovered as a result of on-site recycling operations, combusted on-site for energy recovery, and treated at the facility, plus amounts transferred off-site for recycling, energy recovery, treatment, and disposal. These amounts correspond to total production-related waste in this report.

If the facility does not exceed the total production-related amount of 500 pounds, and does not manufacture, process, or otherwise use more than 1 million pounds of the listed chemical, the facility does not have to file a Form R. Instead of filing a Form R detailing its releases and waste management activities, the facility can submit a certification statement (Form A). Form A certifies that the facility met the conditions outlined above for the listed chemical, but does not require reporting of any amounts of the toxic chemical released or otherwise managed as waste.

What Are the Benefits and Limitations of the Data?

Benefits

The TRI Program has given the public unprecedented direct access to toxic chemical release and other waste management data at the local, state, regional, and national level. Responsible use of this information can enable the public to identify potential concerns, gain a better understanding of potential risks, and work with industry and government to reduce toxic chemical releases and the risks associated with them. When combined with hazard and exposure data, this information can allow informed environmental priority-setting at the local level.

Federal, state, and local governments can use the data to compare facilities or geographic areas, to identify hot spots, to evaluate existing environmental programs, to more effectively set regulatory priorities, and to track pollution control and waste reduction progress. TRI data, in conjunction with demographic data, can help government agencies and the public identify potential environmental justice concerns.

Industry can use the data to obtain an overview of the release and other waste management of toxic chemicals, to identify and reduce costs associated with toxic chemicals in waste, to identify promising areas of pollution prevention, to establish reduction targets, and to measure and document progress toward reduction goals. Public availability of the data has prompted many facilities to work with communities to develop effective strategies for reducing environmental and human health risks posed by releases and other waste management of toxic chemicals.

Completion of three major efforts in EPA's strategy to enhance TRI's effectiveness has significantly increased the usefulness of TRI data. These actions

were the TRI chemical expansion for the 1995 reporting year, facility expansion to include new industries with the 1998 reporting year, and expanded coverage of PBT chemicals through lower reporting thresholds and addition of PBT chemicals to the TRI chemical list beginning with the 2000 reporting year.

EPA's expansion strategy has given TRI users a substantially greater range and depth of valuable information. EPA's action on chemical expansion nearly doubled the number of chemicals that TRI addresses. As a result of the addition of seven industries, nearly 2,000 additional facilities have submitted reports. With the data for reporting year 2000, communities have available for the first time additional information on releases and waste management of PBT chemicals that pose potential threats to human health and the environment.

Limitations

TRI reports reflect releases and waste management activities of chemicals, not exposures of the public to those chemicals. Release estimates alone are not sufficient to determine exposure or to calculate potential adverse effects on human health and the environment. Although additional information is necessary to assess exposure and risk, TRI data can be used to identify areas of potential concern. TRI data, in conjunction with other information, can be used as a starting point in evaluating exposures that may result from releases and other waste management activities of toxic chemicals. The determination of potential risk depends upon many factors, including the toxicity of the chemical, the fate of the chemical after it is released, the locality of the release, and the human or other populations that are exposed to the chemical after its release.

While TRI provides the public, industry, and state and local governments an invaluable source of key environmental data, it has some limitations that must be considered when using the data. **What to Consider When Using TRI Data**, later in this chapter, describes specific information to keep in mind when analyzing TRI data.

Even with the expanded industry coverage, TRI does not address all sources of releases and other waste management activities of TRI chemicals. Although the Agency has expanded the number of industries that must report and has added PBT chemicals to the section 313 list of toxic chemicals, the program does not cover all sources of releases and other waste management activities of TRI chemicals. Although TRI is successful in capturing information on a significant portion of toxic chemicals currently being used by covered industry sectors, it does not cover all toxic chemicals or all industry sectors. In addition, facilities that do not meet the TRI threshold levels (those with fewer than 10 full-time employees or those not meeting TRI quantity thresholds) are not required to report. The new PBT chemicals reporting thresholds expand the information TRI will collect, but only for a subset of the TRI chemicals. Thus, while the TRI includes 91,513 reports from 23,484 facilities for 2000, the 7.10 billion pounds of on-and off-site releases reported represent only a portion of all toxic chemical releases nationwide.

The Toxics Release Inventory data do not include data on toxic emissions from cars and trucks, nor from the majority of sources of releases of pesticides, volatile organic compounds, fertilizers or from many other non-industrial sources.

Furthermore, facilities report estimated data to TRI, and the program does not mandate that they monitor their releases. Various estimation techniques are used when monitoring data are not available, and EPA has published estimation guidance for the regulated community. Variations between facilities can result from the use of different estimation methodologies. These factors should be taken into account when considering data accuracy and comparability.

As discussed above, the TRI data summarized in this report reflect chemical releases and waste management activities that occur in a given calendar year. Patterns of releases and waste management activities can change dramatically from one year to the next. Thus, it is important to recognize that cur-

rent facility activities may be different from those reported for 2000 or prior years.

TRI IN PERSPECTIVE

In 1987, when the Congress passed EPCRA, 300-plus chemicals and chemical categories were included in the "TRI Chemical List" and only the manufacturing sector in SIC codes 20–39 was required to report under EPCRA section 313. Further, data coverage was initially confined to information on releases and certain transfers off-site for further waste management.

Passage of the PPA in 1990 expanded TRI to include additional information on toxic chemicals in waste and on source reduction methods. Beginning in 1991, covered facilities were required to report quantities of TRI chemicals recycled, combusted for energy recovery, and treated on- and off-site. Over time, EPA has worked to expand TRI to cover other industrial sectors and other chemicals that may have potential adverse impacts on our environment. Towards that end, the Agency has pursued an expansion strategy that has enlarged the boundaries of TRI in several directions.

Chemical Expansion

The original TRI chemical list combined two existing lists: the New Jersey Environmental Hazardous Substance List and the Maryland Chemical Inventory Report List. Over time, through EPA's petition process, the original list has been modified as the Agency responded to petitions to add and delete chemicals, given the law's toxicity listing criteria. These criteria focus on both acute and chronic health effects as well as environmental effects, as outlined in section 313(d) of EPCRA.

The first chemical expansion occurred in 1993 with the addition of certain chemicals that appear on the Resource Conservation and Recovery Act (RCRA) (58 FR 63500) list of hazardous wastes and certain hydrochlorofluorocarbons (HCFCs) (58 FR 63496) to EPCRA section 313.

The second expansion was the addition of 286 chemicals and chemical categories on November 30, 1994 (59 FR 61432)[1]. The additional chemicals can be characterized as high or moderately high in toxicity, and they are currently manufactured, processed, or otherwise used in the U.S. Many are high production volume (HPV) chemicals. This list expansion raised the number of chemicals and chemical categories reported to TRI to more than 600. Specifically, the rule added more than 150 pesticides, certain Clean Air Act chemicals, certain Clean Water Act Priority Pollutants, and certain Safe Drinking Water Act (SDWA) chemicals. Many of the chemicals are carcinogens, reproductive toxicants, or developmental toxicants. Of particular note is the addition of industrial chemicals such as diisocyanates, n-hexane, N-methyl-2-pyrrolidone, and chemicals such as polycyclic aromatic compounds that result from the combustion of fuels.

Facility Expansion

Since the enactment of EPCRA, the TRI Program has focused on the releases and waste management activities of the manufacturing sector—facilities that classify themselves as being primarily in SIC codes 20–39. To provide the public with a more complete picture of the toxics in their community, EPA undertook a detailed examination of other, non-manufacturing industries to determine which may be significant generators of toxic chemical releases and other wastes. This effort focused particular attention on sectors linked to manufacturing—those providing energy, further managing products, or further managing waste from the manufacturing sector.

Factors used to evaluate industries for this expansion included other available data on toxic chemical releases and other waste management activities, the interrelationship of non-manufacturing operations to manufacturing operations, the degree to which reporting would be expected to occur, and the potential burden that TRI reporting might impose on these facilities.

1 Of the 286 chemicals, 20 were diisocyanates and 19 were polycyclic aromatic compounds These are reported not as individual chemicals, but as two chemical compound categories Not individually counting the members of these two categories converts 286 to 249 Furthermore, three other chemicals have been remanded and one chemical was not reportable because of an administrative stay Thus, the number of chemicals added to TRI, beginning with the 1995 reporting year, was 245

On May 1, 1997, EPA published a final rule (62 FR 23833) adding seven industry sectors to TRI: metal mining, coal mining, electrical utilities that combust coal and/or oil, hazardous waste treatment and disposal facilities, chemical wholesale distributors, petroleum bulk stations and terminals, and solvent recovery services (**Who Must Report?**, earlier in this chapter, identifies the SIC codes for the added industries). EPA has also conducted an aggressive outreach campaign, including guidance, training, and technical assistance to assist these new industries in understanding their reporting obligations. Final guidance documents for these industries are available from EPA's Web site at http://www.epa.gov/tri.

Persistent Bioaccumulative Toxic Chemicals (PBTs)

Beginning with the reporting year 2000, lower reporting thresholds apply to TRI facilities that manufacture, process, or otherwise use certain PBT chemicals. Also, additional PBT chemicals that TRI has not previously covered have been added to the section 313 toxic chemical list. These new reporting requirements were issued in October 1999 (64 FR 58666).

PBT chemicals include substances such as mercury and polychlorinated biphenyls (PCBs) already on the TRI list, and dioxin and dioxin-like compounds, which were among the chemicals added for the 2000 reporting year. The PBT chemicals are of particular concern not only because they are toxic, but also because they remain in the environment for long periods of time and are not readily destroyed (i.e., they are persistent), and they build up or accumulate in body tissue (i.e., they bioaccumulate). Relatively small releases of PBT chemicals can pose human and environmental health threats. Consequently, these chemicals warrant recognition by communities as potential health threats and information about their releases and waste management need to be captured by the TRI Right-to-Know Program.

In the October 1999 PBT chemical rulemaking, EPA created three separate thresholds for PBT chemicals: 10 pounds for certain highly persistent, highly bioaccumulative toxic chemicals, 100 pounds for other PBT chemicals, and a special threshold of 0.1 grams for dioxin and dioxin-like chemicals. The threshold for a PBT chemical is the same for manufacturing, processing or otherwise use (i.e., either 100 lbs or 10 lbs or 0.1 grams for dioxin and dioxin-like compounds). Under the existing thresholds of 25,000 pounds for manufacturing or processing of a listed chemical and 10,000 pounds for otherwise using a listed chemical, important information on the releases and other waste management of the PBT chemicals were not reported. In addition to the chemical category of dioxin and dioxin-like compounds (a total of 17 substances), six other PBT chemicals have been added to TRI: benzo(g,h,i)perylene, benzo(j,k)fluorene (fluoranthene) (as part of the PACs category), 3-methylcholanthrene (as part of the PACs category), octachlorostyrene, pentachlorobenzene, and tetrabromobisphenol A. New reporting thresholds apply to the following PBT chemicals already on the TRI list: aldrin, chlordane, heptachlor, hexachlorobenzene, isodrin, methoxychlor, pendimethalin, polycyclic aromatic compounds, polychlorinated biphenyls, toxaphene, trifluralin, mercury and mercury compounds.

In a separate action, as part of the October 29, 1999 rulemaking, EPA changed the qualifier for vanadium from "fume or dust" to "except when contained in an alloy" and added vanadium compounds. These are not PBT chemicals.

On April 17, 2001 EPA announced that it will proceed with the final rule, issued January 17, 2001 (66 CFR 4500), lowering the reporting threshold for lead and lead compounds to 100 pounds. The new reporting threshold and requirements are effective for the 2001 reporting year and applies to all lead and lead compounds except for lead contained in stainless steel, brass and bronze alloys.

TRI RELEASES AND WASTE MANAGEMENT: DATA ANALYZED IN *2000 TRI PUBLIC DATA RELEASE REPORT*

What to Consider When Using TRI Data

Users of TRI information should be aware that TRI data reflect releases and other waste management of chemicals, not whether (or how much) the public has been exposed to those chemicals. TRI data, in conjunction with other information, can be used as a starting point in evaluating exposures that may result from releases and other waste management activities which involve toxic chemicals. The determination of potential risk depends upon many factors, including the toxicity of the chemical, the fate of the chemical, and the amount and duration of human or other exposure to the chemical after it is released. Listed below are some of the factors that should be considered when reviewing TRI data. Box 1-3 highlights some of these factors.

Toxicity of the Chemical

The TRI list consists of chemicals that vary widely in their ability to produce toxic effects.

- Some high-volume releases of less toxic chemicals may appear to be a more serious problem than lower-volume releases of more toxic chemicals, when just the opposite may be true. For example, phosgene is toxic in smaller quantities than methanol. A comparison between these two chemicals for setting hazard priorities or estimating potential health concerns, solely on the basis of volumes released, may be misleading.

Exposure Considerations

- **Potential degradation or persistence of the chemical in the environment.** Exposure to a chemical is dependent upon the chemical being available. The longer the chemical remains unchanged in the environment, the greater the potential for exposure. Sunlight, heat, or microorganisms may or may not decompose the chemical.
  - For example, microorganisms readily degrade some chemicals, such as methanol, into less toxic chemicals; volatile organic compounds, such as ethylene and propylene, react in the atmosphere and contribute to the formation of smog; metals are persistent and will not degrade upon release to the environment.
  - As a result, smaller releases of a persistent, highly toxic chemical may create a more serious problem than larger releases of a chemical that is rapidly converted to a less toxic form.
- **Bioconcentration of the chemical in the food chain.** As a chemical becomes incorporated in the food chain, it may concentrate or disperse as it moves up the food chain.
  - Some chemicals, such as mercury, accumulate as they move up the food chain.

Box 1-3: Factors to Consider in Using TRI Data

Toxicity of the Chemical: TRI chemicals vary widely in their ability to produce toxic effects. Some high-volume releases of less-toxic chemicals appear to be a more serious problem than lower-volume releases of highly toxic chemicals, when just the opposite may be true.

Exposure Considerations: The potential for exposure is greater the longer the chemical remains unchanged in the environment. Sunlight, heat, or microorganisms may or may not decompose the chemical. For example, microorganisms readily degrade some chemicals, such as methanol, into less-toxic chemicals, whereas metals are persistent and will not degrade when released to the environment. Chemical exposure of a population depends on the environmental medium (air, water, land, etc.) to which a chemical is released. The medium also affects the types of exposures possible, such as inhalation, dermal exposure, or ingestion.

- Small releases of a chemical that bioaccumulates may result in significant exposures to consumers.

♦ **The environmental medium (air, water, land, or underground injection) to which the toxic chemical has been released.** Chemical exposure of a population depends on the environmental medium to which a chemical is released. The medium also affects the types of exposures possible, such as inhalation, dermal exposure, or ingestion.

- Releases of a chemical to the air can result in exposures to organisms living near and downwind from facilities releasing toxic chemicals to the atmosphere. Persistent chemicals may fall or precipitate from air onto land or into water bodies, resulting in exposures via these environmental media.

- Exposures that may result from releases to water bodies (streams, lakes, etc.) depend in part on the downstream uses of the water, including drinking, cooking, and bathing.

- Releases to underground injection wells are regulated by EPA's Underground Injection Control Program to provide safeguards so that injection wells do not endanger current and future underground sources of drinking water. When wells are properly sited, constructed, and operated, underground injection is an effective and environmentally safe method to dispose of wastes.

♦ **The type of off-site facility receiving the chemical and the efficiency of its waste management practices.** The amount of a toxic chemical that ultimately enters the environment depends on how the chemical was handled during disposal, treatment, energy recovery, or recycling activities. Several factors to keep in mind when considering amounts sent off-site are presented below.

- The efficiency of recycling operations varies depending on the method of recycling and the chemical being recycled.

- Use of a combustible toxic chemical for energy recovery typically results in the destruction of 95% to 99% or more of the toxic chemical. The remaining quantity may be either released to air or disposed of in ash to land.

- The efficiency of the treatment of toxic chemicals in waste sent to sewage treatment plants varies depending on the chemical and the sewage plant. Some high-volume pollutants, such as methanol, are readily degraded by most sewage treatment plants. Other chemicals, such as methyl ethyl ketone (MEK), may be partially treated and partially released. Other high-volume chemicals, such as ammonia, are not readily treated by most sewage treatment plants and will pass through the plant into the aquatic environment. In addition, metals sent to sewage treatment plants may be removed with solid wastes and sent to landfills, or they may pass through the plant and be discharged into surface waters; they are not, however, destroyed.

- The efficiency of other treatment methods, such as incineration, also depends upon the specifications of the treatment facility and the nature of the chemical.

- Toxic chemicals in waste sent off-site for disposal are typically released to land or injected underground.

♦ **On-site waste management of the toxic chemical.** As with off-site waste management, the amount of the toxic chemical released to the environment depends on how the chemical was handled during disposal, treatment, energy recovery, or recycling activities. However, since

the waste management is on-site, any amount of the chemical that enters the environment after waste management is reported to TRI as part of that facility's releases.

On-site and Off-site Releases

Figure 1-1 illustrates on-site and off-site releases, on-site waste management activities, and transfers off-site for further waste management, reportable to TRI. Box 1-4 describes reportable releases that may occur on-site at the facility and identifies types of activities that may contribute releases to various media. Box 1-5 describes releases that may ultimately result when a facility transfers chemicals off-site for disposal.

As noted in Box 1-5, off-site releases include additional details about off-site transfers of metals and metal compounds, beginning with reporting year 1997. Box 1-6 explains how facilities should report metals and metal compounds, and Box 1-7 describes EPA's methodology for using these data in analyses in this report.

Box 1-8 describes EPA's methodology for avoiding duplication of amounts analyzed in off-site releases (transfers to disposal) that are also reported as on-site releases by facilities that received such transfers. This potential for duplication arises now that RCRA subtitle C hazardous waste treatment and disposal facilities also report to TRI. The methodology applies to analyses that include data from the newly reporting industries.

Waste Management

The PPA of 1990 requires facilities to report information about the quantities of TRI chemicals they manage in waste, both on- and off-site. The PPA established as national policy that source reduction is the preferred approach to managing waste. Source reduction is defined as an activity that prevents the generation of waste. The PPA also established as national policy a hierarchy of waste management options, illustrated in Figure 1-2, for situations where source reduction cannot be implemented feasibly.

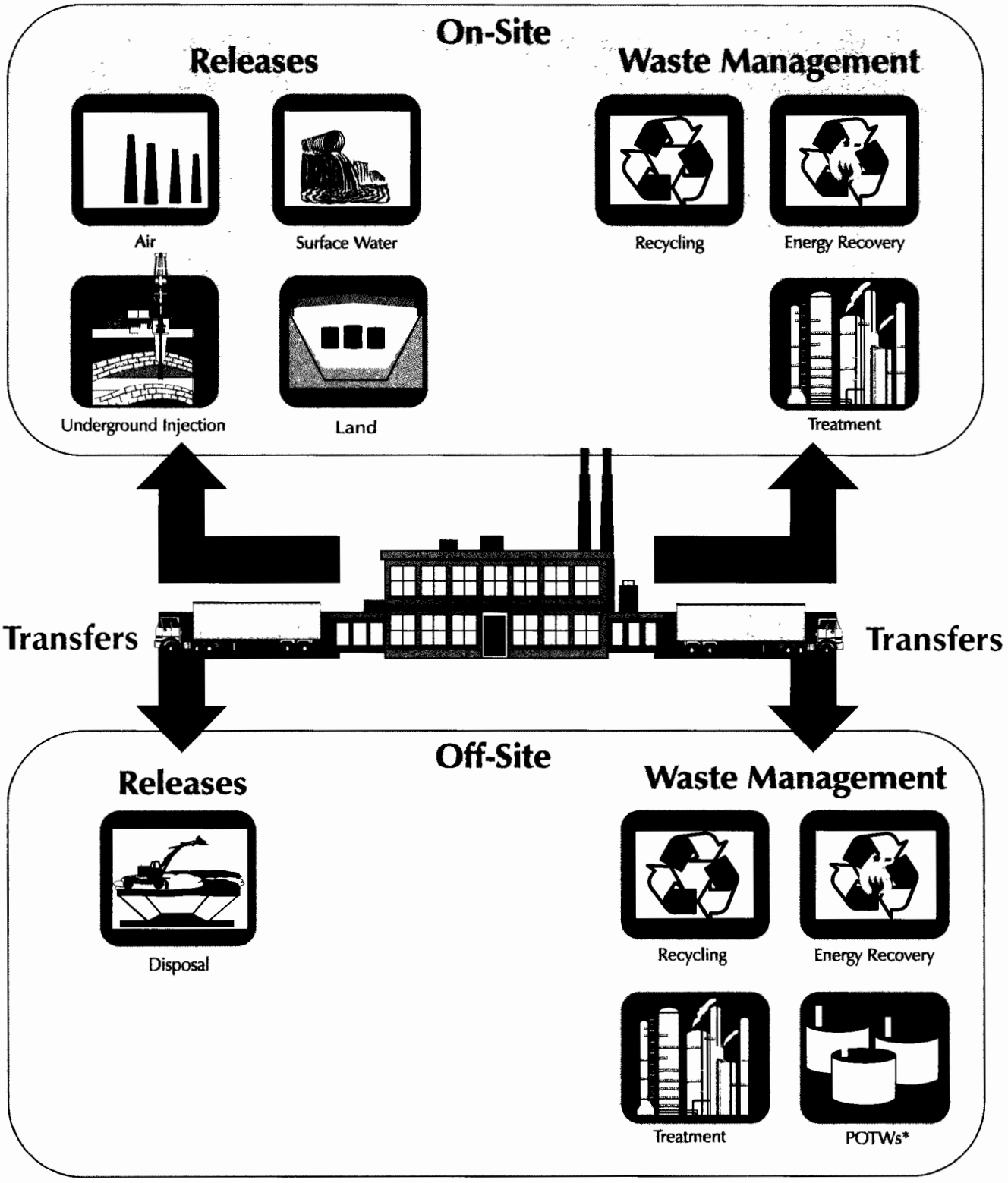
Although source reduction is the preferred method of reducing risk, environmentally sound recycling shares many of its advantages. Like source reduction, recycling reduces the need for treatment or disposal of waste and helps conserve energy and natural resources. Where source reduction and recycling are not feasible, waste can be treated. Release (including disposal) of a chemical is viewed as a last resort, to be employed only if the preferred methods of waste management cannot be implemented. The PPA did not specifically address the combustion of waste for energy recovery as a waste management option. However, because energy recovery shares aspects of recycling and treatment, EPA chose to list this activity separately in the waste management hierarchy.

Waste management data presented in this book appear in tables and figures in the order of the hierarchy: recycling, energy recovery, treatment, and release (including disposal).

Box 1-9 describes the waste management information facilities must report to TRI. The amount of TRI chemicals in waste reported includes both waste generated by the facility and waste received by the facility for the purpose of waste management. Facilities report these data as estimates for the reporting year (2000) and the previous year (1999) and as projections for the two following years (2001 and 2002). The PPA requires this data projection to encourage facilities to consider their future waste generation, opportunities for source reduction, and potential improvement in waste management options as presented in the hierarchy. Future-year estimates are not commitments that facilities reporting to TRI must meet.

The individual waste management quantities reported are mutually exclusive to avoid double-counting. For example, an incinerator may destroy 99% of the chemical in the waste; in this case, the amount reported as treated on-site would be the amount destroyed by the incinerator, not the amount that entered the incinerator. The amount not destroyed in incineration (1%) would be reported as released.

Figure 1-1: Information Collected under TRI



*Publicly Owned Treatment Works

Box 1-4: An Explanation of On-site Releases

A release is a discharge of a toxic chemical to the environment. On-site releases include emissions to the air, discharges to bodies of water, releases at the facility to land, as well as releases into underground injection wells. Releases are reported to TRI by media type. On-site releases are reported in Section 5 of Form R.

Air Emissions. Releases to air are reported either as point source or fugitive emissions. Point source emissions, also referred to as stack emissions, occur through confined air streams, such as stacks, vents, ducts, or pipes. Fugitive emissions are all releases to air that are not released through a confined air stream. Fugitive emissions include equipment leaks, evaporative losses from surface impoundments and spills, and releases from building ventilation systems.

Surface Water Discharges. Releases to water include discharges to streams, rivers, lakes, oceans, and other bodies of water. This includes releases from contained sources, such as industrial process outflow pipes or open trenches. Releases due to runoff, including stormwater runoff, are also reportable to TRI.

Underground Injection. Underground injection is the subsurface emplacement of fluids through wells. TRI chemicals associated with manufacturing, the petroleum industry, mining, commercial and service industries, and federal and municipal government-related activities may be injected into Class I, II, III, IV, or V wells, if they do not endanger underground sources of drinking water (USDW), public health, or the environment. The different types of authorized injection activities are as follows:

- Class I wells include the emplacement of hazardous and nonhazardous fluids (industrial and municipal wastes) into isolated formations beneath the lowermost underground source of drinking water (USDW). Because they may inject hazardous waste, Class I wells are the most strictly regulated and are further regulated under the Resource Conservation and Recovery Act.
- Class II includes injection of brines and other fluids associated with oil and gas production.
- Class III encompasses injection of fluids associated with solution mining of minerals.
- Class IV addresses injection of hazardous or radioactive wastes into or above a USDW and is banned unless authorized under other Statutes for ground water remediation.
- Class V wells inject nonhazardous fluids into or above a USDW and are typically shallow, on-site disposal systems, such as floor and sink drains which discharge directly or indirectly to ground water, dry wells, leach fields, and similar types of drainage wells.

Beginning with the 1996 reporting year, facilities separately report amounts injected into Class I wells and into all other wells. This change was made to recognize the difference in management and regulatory oversight provided by the Underground Injection Control Program for Class I wells as distinguished from other forms of injection reportable to TRI.

On-site Land Releases. On-site releases to land occur within the boundaries of the reporting facility. Releases to land include disposal of toxic chemicals in landfills (in which wastes are buried), land treatment/application farming (in which a waste containing a listed chemical is applied to or incorporated into soil), surface impoundments (which are uncovered holding areas used to volatilize and/or settle waste materials), and other land disposal methods (such as waste piles) or releases to land (such as spills or leaks). Beginning with the 1996 reporting year, facilities separately report amounts released to RCRA subtitle C landfills from amounts released to other on-site landfills. This change was made to address concerns about public misperception of disposal to land and to help the public better understand the nature of these various methods of disposal.

Box 1-5: An Explanation of Off-site Releases (Transfers Off-site to Disposal)

An off-site release is a discharge of a toxic chemical to the environment that occurs as a result of a facility's transferring a waste containing a TRI chemical off-site to disposal, as reported in Section 6 of Form R. Certain other types of transfers are also categorized as off-site releases because, except for location, the outcome of transferring the chemical off-site is the same as releasing it on-site.

Transfers to Disposal. Toxic chemicals in waste that are transferred off-site for disposal generally are either released to land at an off-site facility or are injected underground. (See discussion of on-site releases to land and underground injection for a description of these release types.)

Storage Only. Generally, a toxic chemical is sent off-site for storage because there is no known disposal method. One example is toxic chemicals in mixed hazardous and radioactive waste. EPA considers this an off-site release because this method is being used as a form of disposal and the toxic chemical will remain there indefinitely.

"Unknown." The "unknown" category of disposal indicates that a facility is not aware of the type of waste management used for the toxic chemical that is sent off-site. Therefore, EPA has categorized this method as the lowest type of waste management (environmentally least desirable) and has included it as a type of disposal for reporting purposes. Thus, it is considered to be an off-site release.

Metals and Metal Compounds. Transfers of metals and metal compounds to solidification/stabilization, to wastewater treatment (excluding POTWs), and to publicly owned treatment works (POTWs, or municipal sewage treatment) also result in releases and are classified as off-site releases (transfers to disposal) (see Box 1-6).

Box 1-6: How Metals and Metal Compounds Should be Reported to TRI

In Section 6.2 of Form R, facilities report the amounts sent to each off-site location to which the facility ships or transfers wastes containing the reported toxic chemical for the purposes of recycling, energy recovery, treatment, or disposal. Metals and metal compounds are managed in waste either by being released (including disposal) or by being recycled. The metal has no heat value and thus cannot be combusted for energy recovery and cannot be treated because it cannot be destroyed regardless of whether the stream containing the metal is sent for energy recovery or treatment. Thus, transfers of metals and metal compounds for further waste management should be reported as either a transfer for recycling or a transfer for disposal. The applicable waste management code for transfers of metals and metal compounds for recycling is M24. Applicable codes for transfers for disposal include M10, M41, M62, M71, M72, M73, M79, M90, M94, and M99. Two codes, M41 and M62, were new for the 1997 reporting year. These codes are for transfers to waste management in which the wastestream may be treated but the metal contained in the wastestream is not treated and is ultimately released. For example, M41 would be used for a metal or metal compound which is stabilized in preparation for disposal.

Prior to the 1997 reporting year, some facilities reported transfers of metals and metal compounds for further waste management using two waste treatment codes, M40 and M61. Beginning in reporting year 1997, metals and metal compounds must be reported using one of the 10 disposal codes or the applicable recycling code (M24 for metals recovery).

Off-site Transfers for Further Waste Management: Codes for Section 6.2 of Form R

Recycling
- M 20 Solvents/Organics Recovery
- M 24 Metals Recovery
- M 26 Other Reuse or Recovery
- M 28 Acid Regeneration
- M 93 Transfer to Waste Broker-Recycling

Energy Recovery
- M 56 Energy Recovery
- M 92 Transfer to Waste Broker–Energy Recovery

Treatment
- M 40 Solidification/Stabilization
- M 50 Incineration/Thermal Treatment
- M 54 Incineration/Insignificant Fuel Value
- M 61 Wastewater Treatment (Excluding POTWs)
- M 69 Other Waste Treatment
- M 95 Transfer to Waste Broker–Waste Treatment

Disposal
- M 10 Storage Only
- M 41 Solidification/Stabilization–Metals and Metal Compounds only
- M 62 Wastewater Treatment (Excluding POTWs)–Metals and Metal Compounds only
- M 71 Underground Injection
- M 72 Landfill/Disposal Surface Impoundment
- M 73 Land Treatment
- M 79 Other Land Disposal
- M 90 Other Off-site Management
- M 94 Transfers to Waste Broker–Disposal
- M 99 Unknown

Box 1-6: How Metals and Metal Compounds Should be Reported to TRI *(continued)*

In Section 6.1 of Form R, facilities report amounts of listed chemicals transferred to publicly owned treatment works (POTWs). Because metals are not destroyed by sewage treatment processes, amounts of metals and metal compounds reported in Section 6.1 are considered transfers for disposal.

In Section 8.1 of Form R, facilities report quantities of listed chemicals released on- and off-site (excluding one-time catastrophic or remedial releases). Except for those quantities recycled, metals and metal compounds should be reported in Section 8.1 of the Form R. This includes those quantities of metals and metal compounds reported in:

- Section 5 as on-site releases
- Section 6.2 as sent off-site for stabilization/solidification (M41) or wastewater treatment (excluding POTWs) (M62) and/or,
- Section 6.1 as discharges to POTWs.

These quantities should not be reported in Section 8.7 of the Form R.

Box 1-7: Use of Data for Metals and Metal Compounds in This Report

Off-site releases (transfers to disposal) in tables in this report include the quantities of metals and metal compounds that were reported using the incorrect waste management codes, M40 and M61, in Section 6.2 (e.g., waste treatment codes instead of recycling or disposal codes) along with the quantities of metals and metal compounds that were reported correctly in Section 6.2. For the years prior to 1997 (presented in Chapter 3), EPA has also included the quantities of metals and metal compounds that were reported using the two waste management codes, M40 and M61, as off-site releases rather than off-site waste treatment. In addition, when discussing off-site releases of TRI chemicals, EPA has included those quantities of metals and metals compounds reported as discharges to POTWs in Section 6.1 of the Form R.

Chemicals considered to be metals and metal compounds in this report appear in the tables in Appendix B.

The sum of the individual quantities in a given year equals the total quantity of TRI chemicals in waste resulting from routine production operations at a facility during that year.

For the reporting year only, facilities must also report the quantity of waste released (including disposal) as a result of activities other than routine production operations. This quantity appears in data tables in this book as "non-production-related waste managed." It includes waste released to the environment at the facility or transferred off-site because of catastrophic events or remedial (clean-up) actions at the facility. Non-production-related waste is considered less amenable to source reduction because facilities cannot reasonably anticipate these quantities.

It is important to note that facilities may vary in how they interpret some of the reporting requirements under the PPA. EPA has not yet specifically defined in regulations the reporting requirements for these data elements, so some facilities may include in their reports amounts that other facilities do not believe they must include. Because of this, higher quantities of TRI chemicals in waste for a particular state or industry may reflect not only differences in actual quantities, but also different interpretations of the reporting requirements.

Box 1-10 explains the differences between total on- and off-site releases and quantity released on- and off-site.

Transfers Off-site for Further Waste Management

Box 1-11 describes off-site transfers to recycling, energy recovery, treatment, and POTWs that TRI facilities must report.

Box 1-8: Duplication of Off-site Transfers to Disposal

TRI facilities transfer off-site chemicals in waste to other facilities for disposal. These recipient facilities can dispose of the wastes in on-site landfills, disposal surface impoundments, in land treatment facilities, or by using other types of land disposal methods. They may also dispose of wastes in underground injection wells or, if metals are sent to a wastewater treatment facility, they may be discharged to surface waters. The recipient facilities generally are treatment, storage and disposal (TSD) facilities regulated under the federal Resources Conservation and Recovery Act (RCRA). Such facilities are one of the added industries that must, beginning with the 1998 reporting year, report their releases, transfers, and waste management to TRI. Thus, the facility that sends these transfers would report to TRI the amounts as transfers to disposal (off-site releases) and the TSD facility that receives the material would report the amounts as on-site releases to land, surface waters, or underground injection.

To avoid counting the transfers to the TSD facilities that are also reported to TRI as on-site releases by the TSD facilities, off-site transfers to disposal to these TSD facilities must be omitted from tables that compare or summarize on-site and off-site releases for all industries, including the newly added industries. Only the on-site releases from the TSD facilities are included in such analyses. In the 2000 TRI Public Data Release, this applies to tables presented in Chapters 2, 3 and 4.

The RCRA ID number that facilities report was used to identify such transfers and match them to on-site releases reported by TSD facilities. A TRI facility must report its own RCRA ID number as well as the RCRA ID number of the TSD facility receiving the transfer. Each amount of off-site transfer to disposal should have the RCRA ID number of the receiving facility. If this RCRA ID number matches the RCRA ID number of a TRI facility and the TRI facility receiving the waste reported on-site releases of the same chemical (or the metal and its compounds in the case of metals) that were greater than or equal to the sum of the off-site transfers received, then the off-site transfer amount is omitted from the analysis.

If the TRI facility receiving the waste reported on-site releases of the chemical less than the total reported as transferred to the facility, then the amount omitted from the analysis is reduced proportionally. For example, if Facility A reported 20,000 pounds transferred to Facility C and Facility B reported 80,000 pounds transferred to Facility C, but Facility C only reported 90,000 pounds released on-site (which is 90 percent of the total amount of 100,000 pounds reported as transferred), then the amount of transfers omitted from the analysis for Facility A is 18,000 pounds (or 90 percent of 20,000 pounds) and for Facility B is 72,000 pounds (or 90 percent of 80,000 pounds).

In tables that present off-site transfers but not on-site releases, these amounts are not omitted in order to present complete data on off-site transfers for analysis. Also, tables that present data on waste managed do not omit any reported data in order to present complete data on how waste is being managed.

The following shows which types of off-site transfers to disposal are matched with which types of on-site releases to determine if the transfers should be omitted:

Off-site Transfer M Code	Section 5 Checked for Recipient TRI Facilities Based on Matching Chemical or, if Metal, Metal plus Metal Compounds
M10	5.5.4
M41*	5.5.1 A and B
M62*	5.5.1 A and B, 5.5.3 and 5.3
M71	5.4
M72	5.5.1 A and B, 5.5.3
M73	5.5.2
M79	5.5.4
M90	All Section 5
M99	All Section 5

*Includes metals and metal compounds reported under codes M40 and M61.

Making Year-to-Year Comparisons of TRI Data

Year-to-year comparisons must be based on a consistent set of reporting requirements to assure that any changes in releases or waste management data do not simply reflect expansion of TRI's chemical and industry coverage or other modifications in reporting requirements over the course of the years. Therefore, trend analyses have been undertaken using various baseline years, as described below.

1995–2000

In addition to the industry expansion undertaken in 1998, EPA has made changes during the 1995–2000 period to the list of chemicals that must be reported. EPA has the authority both to add chemicals to the TRI reporting list if they meet the statutory toxicity criteria and to delete chemicals from the list if EPA determines that they do not meet the toxicity criteria. For the 2000 reporting year, PBT chemicals already on the list had the reporting thresholds lowered and other PBT chemicals were added to the list. In addition, vanadium compounds were added to the list and vanadium was changed to exclude vanadium when contained in alloys. Since 1995, EPA has deleted three chemicals from the TRI list, including phosphoric acid in 1999. These chemicals as well as the PBT chemicals and vanadium and vanadium compounds are excluded from analyses of the 1995–2000 data. The reporting by new industries is also excluded from the 1998, 1999 and 2000 data for analyses covering the 1995–2000 period.

In reporting year 1997, TRI began distinguishing metals and metal compounds from other listed chemicals in certain types of off-site transfers. Specifically, metals and metal compounds transferred off-site to solidification/stabilization, to wastewater treatment (excluding POTWs), and to POTWs are also classified as off-site releases. (See Boxes 1-5 through 1-7.) Although this categorization was new in 1997, comparable transfers of metals and metal compounds in previous years can be identified by the waste treatment codes that applied in those years. Tables in this book present such data.

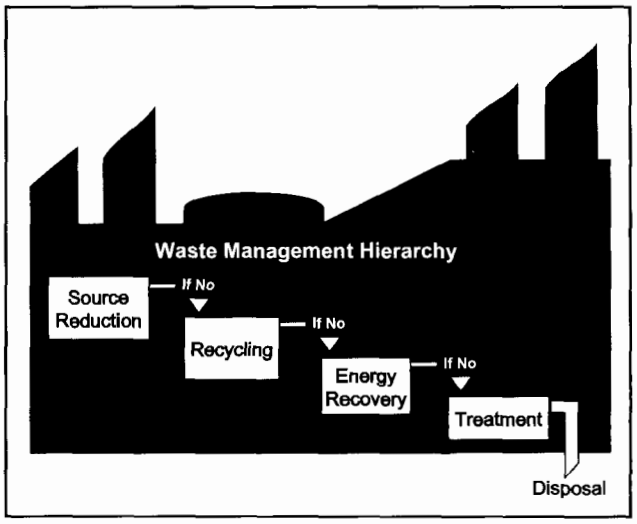
1991–2000

Waste management information added to TRI by the PPA of 1990 has been collected since 1991. Chemicals added to TRI in EPA's chemical expansion initiative were first reportable in 1994, a few other chemicals were added in 1995, and some PBT chemicals were added in 2000. All of these substances are excluded from analyses of the 1991–2000 data. Reporting requirements for ammonia, hydrochloric acid, and sulfuric acid have changed since 1991 and reporting thresholds changed for some PBT chemicals in 2000. These chemicals are also excluded. The reporting by new industries is also excluded from the 1998, 1999 and 2000 data for analyses covering the 1991–2000 period.

1988–2000

Analyses for the period 1988 to 2000 exclude chemicals added to TRI since 1988 and those for which reporting requirements have changed over that time. Also, reporting by new industries is excluded from the 1998, 1999 and 2000 data for analyses covering the 1988–2000 period. Additional considerations also apply to analyses of TRI data for 1988 to 2000, including:

Figure 1-2: Waste Management Hierarchy



- In 1989, the reporting thresholds for manufacture and processing of TRI chemicals was reduced from 50,000 pounds to 25,000 pounds. This may affect data for 1988 and 1989, but not for subsequent years.

- Off-site transfers to recycling and energy recovery became reportable in 1991. Comparisons between 1988 and 2000 include only the transfer types that were reportable in 1988.

- Reporting of amounts injected underground into Class I wells separately from amounts injected into underground wells of other classes (II–V), and reporting of on-site land releases to RCRA subtitle C landfills separately from other types of on-site land releases began in 1996. These release types cannot be analyzed separately for 1988 and later years.

Reasons for Change

Box 1-12 provides reasons that a facility's reported amounts may change from one year to another. Explanations for changes in reported amounts include actual source reduction projects undertaken to reduce a facility's generation of waste of a particular chemical, increases or decreases in production levels, changes in a facility's methods of estimating

Box 1-9: An Explanation of Waste Management Information

Information about facilities' management of TRI chemicals in waste is reported in Section 8 of Form R.

Recycled On-site. This is the quantity of the toxic chemical recovered at the facility and made available for further use. To avoid double-counting, the amount reported represents the amount exiting the recycling unit. It is not the quantity that entered an on-site recycling or recovery operation. For example, 3,000 pounds of a listed chemical enters a recycling operation. Of this, 500 pounds of the chemical are in residues from the recycling operation that are subsequently sent off-site for disposal. The quantity reported as recycled on-site would be 2,500 pounds.

Recycled Off-site. This is the quantity of the toxic chemical that left the facility boundary for recycling, not the amount recovered at the off-site location. This quantity includes the amount(s) reported in Section 6 of Form R as transferred off-site for recycling, less any amount(s) associated with non-routine events.

Used for Energy Recovery On-site. This is the quantity of the toxic chemical that was combusted in some form of energy recovery device, such as a furnace (including kilns) or boiler. The toxic chemical should have a heating value high enough to sustain combustion. To avoid double-counting, the amount reported represents the amount destroyed in the combustion process, not the amount that entered the energy recovery unit. For example, 100,000 pounds of toluene entered a boiler that, on average, combusted 98% of the toluene. Any remaining toluene was discharged to air. A total of 98,000 pounds is reported as combusted for energy recovery (the remaining 2,000 pounds is reported as released).

Used for Energy Recovery Off-site. This is the quantity of the toxic chemical that left the facility boundary for energy recovery, not the amount combusted at the off-site location. The toxic chemical must have a significant heating value, and the off-site location must have some form of energy recovery unit in place. This quantity includes the amount(s) reported in Section 6 of Form R as transferred off-site for energy recovery, less any amount(s) associated with non-routine events.

Treated On-site. This is the quantity of the toxic chemical destroyed in on-site waste treatment operations, not the amount that entered a treatment operation. For example, if 100,000 pounds of benzene were combusted in an incinerator that destroyed 99% of the benzene, the facility would report 99,000 pounds as treated on-site (the remaining 1,000 pounds would be reported as released).

Treated Off-site. This is the quantity of the toxic chemical that left the facility boundary and was sent to POTWs or other off-site locations for treatment, not the amount that was destroyed at the off-site location(s). This quantity includes the amount(s) reported in Section 6 of Form R as transferred to POTWs or other off-site locations for treatment, less any amount(s) associated with non-routine events and not including quantities of metals and metal compounds (see Box 1-6).

Box 1-9: An Explanation of Waste Management Information *(Continued)*

Released On- and Off-site. This is the total quantity of the toxic chemical that was released to the environment or disposed of at the facility (directly discharged to air, land, and water, and injected underground) or sent off-site for disposal. This quantity is the sum of the amounts reported in Sections 5 and 6 of Form R (releases plus transfers to disposal and transfers to POTWs of metals and metal compounds) less any amount(s) associated with non-routine events.

Released to the Environment Due to One-time Events. This amount is referred to as non-production-related waste and is the quantity released to the environment or sent off-site for recycling, energy recovery, treatment, or disposal due to one-time events not associated with routine production practices. Such events include catastrophic events, such as accidental releases, as well as remedial actions (clean up). This quantity is separated from the quantities recycled, used for energy recovery, treated, and released, to distinguish between quantities that are routinely associated with production operations and are more amenable to source reduction and those that are not routinely associated with production processes and are not so amenable to source reduction because they are not readily anticipated. This separation is important in assessing progress in source reduction at facilities.

or calculating reportable amounts (which does not indicate a corresponding change in actual releases and waste management), reporting errors in previous years for which the facility has not filed a revised submission, and others.

Apparent increases and decreases among industries can also result when facilities change the SIC codes they report from one year to another, reflecting new or discontinued facility operations or indicating a different understanding of how SIC codes relate to the facility's business.

Source Reduction

As noted above, the PPA of 1990 requires facilities to report the quantities of TRI chemicals they manage in waste, both on- and off-site. The PPA also requires facilities to provide information about the efforts they have made to reduce or eliminate those quantities. With the 1991 reporting year, facilities began reporting to TRI information about any source reduction activities they implemented during the year.

Source reduction activities are undertaken to reduce the amount of a toxic chemical which enters a wastestream or is otherwise released to the environment. By reducing the generation of toxic chemicals in waste, source reduction activities reduce the need to recycle, treat, or dispose of toxic chemicals. Box 1-13 explains source reduction as defined by the PPA.

A reported source reduction activity could have been implemented at any time during the reporting year. This is important to consider when analyzing the impact that source reduction activities may have had on the total quantity of waste that a facility managed during the year. Undertaking a source reduction activity late in the reporting year would have a smaller impact on the amount of waste that was managed during the year than implementing the same activity earlier in the year.

Box 1-10: Differences between Amounts Reported in Sections 5 and 6 and in Section 8 of Form R

"Total on- and off-site releases" and "quantity released on- and off-site" are not the same. This difference arises primarily from the types of releases reported on different sections of the Form R. "Total on- and off-site releases" reflects all on-site releases as collected in Section 5 of the Form R and transfers off-site for disposal as reported in Section 6 (including metals and metal compounds as described in Box 1-6). However, "quantity released on- and off-site" is limited to production-related on- and off-site releases as collected in Section 8.1 of the Form R. Although total amounts analyzed in these two categories are often the same, production-related releases reported in Section 8.1 do not include those releases associated with catastrophic events, remedial actions, or other one-time events not related to production. For the same reason, transfers for recycling, energy recovery, and treatment (including POTWs for non-metals) reported in Section 6 do not exactly correspond with similar quantities reported in Section 8. Once again, the relevant parts in Section 8 include only production-related wastes whereas Section 6 includes all off-site waste management amounts.

Other reasons also contribute to the different quantities reported in different sections of the Form R. For example, a release or transfer of less than 1,000 pounds may be reported in ranges in Section 5 and 6 whereas an exact amount must be included in Section 8. Furthermore, facilities may round off the quantities reported in Section 8 to two significant digits.

Box 1-11: An Explanation of Transfers Off-site for Further Waste Management

An off-site transfer, reported in Section 6 of Form R, is the transfer of toxic chemicals in waste to a facility that is geographically or physically separate from the facility reporting under TRI. Chemicals reported to TRI as transferred are sent to off-site facilities for the purposes of recycling, energy recovery, treatment, or disposal. The amounts reported represent a movement of the chemical away from the reporting facility. Except for off-site transfers to disposal, these amounts do not necessarily represent entry of the chemical into the environment. Transfers to disposal represent an off-site release (see Box 1-5).

Transfers Off-site to Recycling. Toxic chemicals in waste that are sent off-site for the purposes of recycling are generally recovered by a variety of recycling methods, including solvent recovery and metals recovery. The choice of the recycling method depends on the toxic chemical being sent for recycling. Once they have been recycled, these chemicals may be returned to the originating facility for further processing or made available for use in commerce.

Transfers Off-site to Energy Recovery. Toxic chemicals in waste sent off-site for purposes of energy recovery are combusted off-site in industrial furnaces (including kilns) or boilers that generate heat or energy for use at that location. Treatment of a chemical by incineration is not considered to be energy recovery.

Transfers Off-site to Treatment. Toxic chemicals in waste that are transferred off-site may be treated through a variety of methods, including biological treatment, neutralization, incineration, and physical separation. These methods typically result in varying degrees of destruction of the toxic chemical.

Transfers to Publicly Owned Treatment Works (POTWs). A POTW is a wastewater treatment facility that is owned by a state or municipality. Wastewaters from facilities reporting under TRI are transferred through pipes or sewers to a POTW. Treatment or removal of a chemical from the wastewater depends upon the nature of the chemical, as well as the treatment methods present at the POTW. In general, chemicals that are easily utilized as nutrients by microorganisms, or have a low solubility in water, are likely to be removed to some extent. Chemicals that are volatile and have a low solubility in water may evaporate into the atmosphere. Not all TRI chemicals can be treated or removed by a POTW. Some chemicals, such as metals, may be removed, but are not destroyed and may be disposed of in landfills or discharged to receiving waters; transfers of metals and metal compounds to POTWs are categorized as off-site releases, as explained in Boxes 1-5 and 1-6.

Other Off-site Transfers. In this report, toxic chemicals in waste that were reported as transferred off-site but for which the off-site activity (i.e., recycling, energy recovery, treatment, or disposal) was not specified or was not an accepted code have been classified as "other off-site transfers."

Box 1-12: Reasons Facility Estimates of Releases and Other Waste Management Change

Some reported increases and decreases are real—that is, they reflect changes in the amounts of TRI chemicals actually released or otherwise managed in waste. Other reported increases and decreases are accounting or "paper" changes that do not reflect change in releases or other waste management. Some examples follow.

Real Changes

Source reduction activities, such as process changes, elimination of spills and leaks, inventory control, improved maintenance, chemical substitution, and alternative methods of cleaning and degreasing can cause real reduction in the amount of waste generated and/or managed.

The installation of pollution control equipment does not reduce the amount of waste generated, but may lead to real reductions in TRI chemicals released. However, if the pollution control does not destroy the reported chemical, it may merely shift waste from one type of waste management to another.

Production changes can cause real changes in the quantities of TRI chemicals released or otherwise managed as waste by facilities. Production-related waste is likely to increase when production increases and decrease when production decreases, although the relationship is not necessarily linear.

One-time events unrelated to normal production processes, such as accidental releases or clean-up operations, can cause a real but anomalous increase in the reporting year in which they occur and then a decrease from that abnormally high level the following year.

"Paper" Changes

Changes in estimation or calculation techniques can cause a change in the amount reported without a corresponding change in actual quantities released or otherwise managed as waste.

Clarifications of reporting instructions or changes in the way a facility interprets those instructions may cause a change in reported amounts without an actual change in quantities released or otherwise managed as waste.

Changes in the reporting definition of a particular chemical may cause a change in the reported amounts without an actual change in quantities released or otherwise managed as waste. For example, revising the definitions of sulfuric acid and hydrochloric acid to include only aerosol forms, as occurred in reporting years 1994 and 1995, resulted in lower reports of releases, when non-aerosol forms were no longer reported.

Similarly, a facility's use of the alternate threshold may result in a reported decrease without an actual reduction in releases if the facility begins to take advantage of an alternate manufacture, process, or otherwise use threshold of more than 1 million pounds. Beginning in the 1995 reporting year, some facilities whose "total annual reportable amount" for a reportable chemical does not exceed 500 pounds may use an alternate manufacture, process, or otherwise use threshold of more than 1 million pounds of the chemical. If they do not exceed this alternate threshold, they no longer need to report amounts of releases or other waste management activities.

Apparent increases or decreases can occur if a facility makes a reporting error one year and does not submit a revision for that year, but does not repeat the error the following year.

Box 1-13: What Is Source Reduction?

Through source reduction, risks to people and the environment can be reduced, financial and natural resources can be saved that would otherwise have to be expended on environmental clean-up or pollution control, and industrial processes can become more efficient. Source reduction is defined in the Pollution Prevention Act of 1990 as any practice that:

- reduces the amount of any hazardous substance, pollutant, or contaminant entering any wastestream or otherwise released into the environment (including fugitive emissions); and
- reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants.

Source reduction practices can include modifications in equipment, process, procedure, or technology, reformulation or redesign of products, substitution of raw materials, and improvements in maintenance and inventory controls. Under this definition, waste management activities, including recycling, treatment, and disposal, are not considered forms of source reduction.

HOW CAN I OBTAIN ADDITIONAL TRI INFORMATION?

The TRI data are available in on-line databases and in a variety of common computer and hard copy formats to ensure that everyone can easily use the information. Information about accessing the TRI database is provided on the inside front cover of this report. The TRI-USer Support Service **(202-566-0250, tri.us@epa.gov)** can provide assistance in accessing and using the TRI data. On-line services include the TRI Explorer, EPA's Envirofacts, the National Library of Medicine's TOXNET system, and the Right-to-Know Network (RTK NET).

To request copies of TRI and EPCRA documents or to obtain further information about the program, contact the toll-free EPCRA Call Center at **1-800-424-9346.** TRI information is also available on the TRI Web site at **www.epa.gov/tri.**

Other potential sources of TRI information include the state EPCRA section 313 contacts, the EPA Regional Offices, or the facilities themselves. EPA regional and state EPCRA section 313 contacts appear in Appendix E of this report, the 2000 TRI Public Data Release: State Fact Sheets and on the TRI Web site.

Chapter 2

Toxics Release Inventory Data Overview, 2000 and 1998-2000

Chapter 2

Toxics Release Inventory Data Overview, 2000 and 1998-2000

This chapter provides a broad overview of TRI data for 2000 and for the period 1998-2000.

For the 2000 reporting year, TRI was expanded to include new PBT chemicals and reporting thresholds were lowered for both the newly-added PBT chemicals and certain PBT chemicals already on the TRI list. These chemicals are examined in detail in Chapter 3.

The seven industries that were required to report to TRI for the first time in 1998—the "new" industries—are analyzed in Chapter 4. Also in Chapter 4 is a separate analysis of reporting by federal facilities.

Detailed analyses of the 20 industries in the manufacturing sector that have been required to report to TRI since the program began in 1987 (the "original" industries) appear in Chapter 5. These original industries are in Standard Industrial Classification (SIC) codes 20 to 39. (For information on SIC codes and their use in TRI, see Box 4-1 in Chapter 4.)

Those federal facilities reporting activities within the new industry sectors are included in the "new" industries, otherwise they are included in the "original" industries. Data as reported by all federal facilities are presented in Chapter 6.

For definitions of types of releases and waste management activities, and for important information on factors to be considered when using TRI data, see Chapter 1.

TRI DATA FOR ORIGINAL AND NEW INDUSTRIES, 2000

On- and Off-site Releases

The combined industries submitted 91,513 forms for 23,484 facilities in 2000. Of those totals, new industries had 9.1 percent of the facilities but submitted 19.0 percent of the forms. In 2000, on- and off-site releases among all TRI industries totaled 7.10 billion pounds. On-site releases were 92.6 percent of the total (6.58 billion pounds), and off-site releases were 7.4 percent of the total (525.1 million pounds). (See Table 2-1.) For all TRI industries, other on-site land releases (that is other than RCRA subtitle C landfills) accounted for over half of total releases (55.3 percent). Air emissions represented 28.8 percent of the total and surface water discharges were 3.7 percent. (See Figure 2-1.)

The new industries accounted for 67.1 percent of the total on- and off-site releases—71.5 percent of the total on-site releases and 19.9 percent of the total off-site releases (transfers to off-site disposal).

In 2000, the new industries had on-site releases of 4.70 billion pounds, 97.6 percent of the new industries' total on- and off-site releases. On-site land releases were 79.4 percent, or 3.83 billion pounds, of the total releases reported by the new industries. Air emissions accounted for 16.6 percent, or 797.8 million pounds. Underground injection and surface water discharges were a combined 1.6 percent of the total releases of the new industries.

Off-site releases accounted for the remaining 2.4 percent of the new industries total on- and off-site releases. Off-site releases to landfills/surface impoundments constituted 1.6 percent (79.3 million pounds) of the new industries' total on- and off-site releases. Solidification/stabilization, other land dis-

Table 2-1: TRI On-site and Off-site Releases, Original (Manufacturing) and New Industries, 2000

	Original Industries		New Industries		All TRI Industries		New Industries as Percent of All TRI Industries
	Number		Number		Number		Percent
Total Facilities	21,352		2,132		23,484		9 1
Total Forms	74,131		17,382		91,513		19 0
Form Rs	63,573		14,731		78,304		18.8
Form As	10,558		2,651		13,209		20 1
	Pounds	Percent of Total	Pounds	Percent of Total	Pounds	Percent of Total	Percent
On-site Releases							
Total Air Emissions	1,106,587,862	48.4	797,818,431	16.6	1,904,406,293	26.8	41.9
Fugitive Air Emissions	249,611,942	10.9	5,736,258	0 1	255,348,200	3.6	2.2
Point Source Air Emissions	856,975,920	37.5	792,082,173	16.4	1,649,058,093	23.2	48.0
Surface Water Discharges	255,370,170	11 2	5,512,215	0 1	260,882,385	3 7	2 1
Underground Injection	207,296,301	9.1	71,740,345	1.5	279,036,646	3.9	25.7
Class I Wells	207,059,365	9.1	33,917,875	0 7	240,977,239	3.4	14.1
Class II-V Wells	236,937	0.0	37,822,470	0.8	38,059,407	0.5	99.4
On-site Land Releases	305,179,352	13 4	3,826,222,733	79 4	4,131,402,086	58 2	92 6
RCRA Subtitle C Landfills	10,469,795	0.5	195,984,872	4.1	206,454,666	2.9	94.9
Other On-site Landfills	115,513,294	5.1	183,576,714	3.8	299,090,008	4 2	61.4
Land Treatment	9,863,854	0.4	4,165,739	0.1	14,029,593	0.2	29.7
Surface Impoundments	53,710,743	2 4	1,029,706,394	21 4	1,083,417,137	15 3	95.0
Other Disposal	115,621,667	5.1	2,412,789,015	50.1	2,528,410,681	35.6	95.4
Total On-site Releases	**1,874,433,686**	**82.1**	**4,701,293,724**	**97.6**	**6,575,727,410**	**92.6**	**71.5**
Off-site Releases							
Storage Only*	8,387,770	0.4	1,069,765	0.0	9,457,535	0.1	11.3
Solidification/Stabilization**	83,687,740	3.7	8,629,482	0 2	92,317,222	1.3	6 9
Metals and Metal Compounds Only							
Wastewater Treatment (Excluding POTWs)***	6,666,824	0 3	349,897	0 0	7,016,721	0 1	5 3
Metals and Metal Compounds Only							
Transfers to POTWs****	3,153,650	0.1	40,549	0 0	3,194,199	0 0	1 3
Metals and Metal Compounds Only							
Underground Injection	23,259,561	1.0	425,919	0.0	23,685,480	0.3	1.9
Landfills/Surface Impoundments	241,837,535	10.6	79,273,086	1.6	321,110,621	4.5	25.0
Land Treatment	4,868,417	0 2	927,226	0 0	5,795,643	0 1	16.0
Other Land Disposal	10,504,441	0.5	11,631,720	0 2	22,136,161	0.3	52.6
Other Off-site Management	8,142,788	0 4	10,041,872	0 2	18,184,660	0 3	54 5
Transfers to Waste Broker for Disposal	14,448,694	0.6	1,747,897	0.0	16,196,591	0.2	10.8
Unknown*****	5,008,593	0 2	985,429	0 0	5,994,022	0.1	16 1
Total Off-site Releases (Transfers Off-site to Disposal)	**409,966,012**	**17.9**	**115,122,842**	**2.4**	**525,088,854**	**7.4**	**19.9**
Total On- and Off-site Releases	**2,284,399,698**	**100.0**	**4,816,416,567**	**100.0**	**7,100,816,264**	**100.0**	**67.1**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI facilities that reported the amount as an on-site release

Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

One facility, Phelps Dodge Miami of Claypool, AZ, that reported under SIC code 33 and SIC code 10 in 2000 and previous years has been included in the new industry category SIC code 10 for the purpose of this analysis

* Storage only (disposal code M10) indicates that the toxic chemical is sent off-site for storage because there is no known disposal method Amounts reported as transferred to storage only are included as a form of disposal (off-site release) See Box 1-5

** Beginning in reporting year 1997, transfers to solidification/stabilization of metals and metal compounds (waste treatment code M41) are reported separately from transfers to solidification/stabilization of non-metal TRI chemicals (waste treatment code M40) Because this treatment method prepares a metal for disposal, but does not destroy it, such transfers are included as a form of disposal (off-site release) See Box 1-6 Reports under code M40 of metals and metal compounds have been included in solidification/stabilization of metals and metal compounds in this report

*** Beginning in reporting year 1997, transfers to wastewater treatment (excluding POTWs) of metals and metal compounds (waste treatment code M61) are reported separately from transfers to wastewater treatment of non-metal TRI chemicals (waste treatment code M60) Because wastewater treatment does not destroy metals, such transfers are included as a form of disposal (off-site release) See Box 1-6 Transfers of metals and metal compounds reported under code M60 have been included in transfers of metals and metal compounds to wastewater treatment

**** Reported as discharges to POTWs in Section 6 1 of Form R EPA considers transfers of metals and metal compounds to POTWs as an off-site release because sewage treatment does not destroy the metal content of the waste material

***** Unknown (disposal code M99) indicates that a facility is not aware of the type of waste management used for the toxic chemical that is sent off-site Amounts reported as unknown transfers are treated as a form of disposal (off-site release)

Box 2-1: Duplication of Off-site Transfers to Disposal, 2000

TRI facilities may transfer off-site chemicals in waste to other facilities for disposal. Box 1-8 in Chapter 1 explains the analysis done to avoid counting transfers by one TRI facility that are also reported as on-site releases by another facility. The off-site transfers to disposal are omitted from tables that compare or summarize on-site and off-site releases for all industries, including the new industries. Only the on-site releases from the other TRI facilities are included in such analyses.

The following shows the results of the analysis for 2000 and how much is omitted from tables that present total releases for all TRI industries.

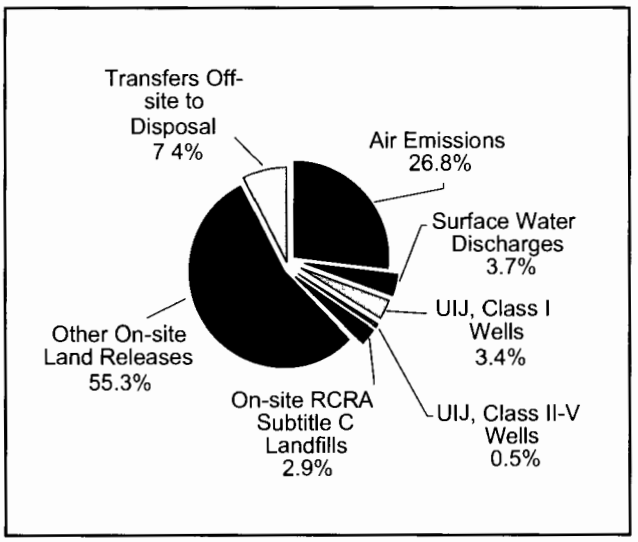
Off-site Transfer M Code	Total Transfers to Disposal	Transfers to Disposal for Matching RCRA ID	Transfers Omitted Because Duplicated in Section 5 of Recipient TRI Facility	Section 5 Checked for Recipient TRI Facilities Based on Matching Chemical or, if Metal, Metal plus Metal Compound
	Pounds	Pounds	Pounds	
M10	9,457,542	4,149,466	7	5.5.4
M41*	153,254,803	179,979,934	60,937,581	5.5.1 A and B
M62*	7,114,525	3,501,718	97,804	5.5.1 A and B, 5.5.3 and 5.3
M71	36,032,917	50,772,804	12,347,437	5.4
M72	336,101,699	60,236,387	14,991,078	5.5.1 A and B, 5.5.3
M73	5,795,643	610,582	0	5.5.2
M79	22,174,663	8,916,450	38,502	5.5.4
M90	18,477,410	3,647,203	292,751	All Section 5
M99	6,170,573	3,224,110	176,551	All Section 5
Total	594,579,775	315,038,654	88,881,710	
Number of Form Rs	91,513	9,507	2,899	

* Includes metals and metal compounds reported under codes M40 and M61.

posal (not land treatment), and other off-site management each accounted for less than 0.2 percent of total on- and off-site releases. Storage only, wastewater treatment (excluding POTWs), transfers to POTWs, underground injection, land treatment, transfers to waste brokers for disposal, and unknown were negligible percentages of total on- and off-site releases.

In 2000, the original industries had on-site releases of 1.87 billion pounds, 82.1 percent of the original industries' total on- and off-site releases. Of on-site releases in the original industries, air emissions constituted 48.4 percent, or 1.11 billion pounds, of total on- and off-site releases, with land releases accounting for 13.4 percent (305.2 million pounds) and surface water discharges accounting for 11.2 percent (255.4 million pounds) of total on- and off-site releases of the original industries. On-site releases to underground injection were 9.1 percent, or 207.3 million pounds, of the total on- and off-site releases.

Figure 2-1: Distribution of TRI On-site and Off-site Releases, All Industries, 2000



Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI facilities that reported the amount as an on-site release
UIJ = Underground Injection

Meanwhile, off-site releases constituted 17.9 percent, or 410.0 million pounds, of the total on- and off-site releases for the original industries. Off-site releases to landfills/surface impoundments were 10.6 percent, or 241.8 million pounds, of the total on- and off-site releases. Solidification/stabilization accounted for 3.7 percent, or 83.7 million pounds, of total on- and off-site releases. Storage only, transfers to POTWs, underground injection, land treatment, other land disposal, other off-site disposal, transfers to waste broker for disposal, and unknown waste management were each less than 1 percent of total on- and off-site releases.

Starting in 1998, hazardous waste treatment and disposal facilities in SIC code 4953 were required to report to TRI. The result is that TRI chemicals in waste may be sent by one TRI facility (which reports the amounts as transfers off-site to disposal) to another TRI facility (which reports the amounts as on-site releases). Box 2-1 shows how much of the off-site transfers to disposal were also reported as on-site releases in 2000.

Waste Management Data

Quantities of TRI Chemicals in Waste

Table 2-2 compares the new and original industries' waste management activities for 2000. The combined TRI industries managed 37.89 billion pounds of production-related waste in 2000. (The TRI industries also managed 264.1 million pounds of non-production-related waste in 2000, 84.9 percent of which came from the new industries.) The original industries accounted for 83.8 percent (31.73 billion pounds) of the total production-related waste managed while the new industries accounted for 16.2 percent (6.15 billion pounds).

Of the total production-related waste managed by all industries, 39.0 percent, or 14.78 billion pounds was treated on-site. The original industries accounted for 93.2 percent, or 13.78 billion pounds, of the production-related waste treated on-site by all industries. Across all industries, 26.0 percent (9.85 billion pounds) of waste was recycled on-site. Again, the original industries accounted for most (98.0 percent or 9.65 billion pounds) of the waste recycled on-site.

Waste released on- and off-site was the third most common management method across all industries, accounting for 18.3 percent (6.94 billion pounds) of the total production-related waste managed. In this category, however, new industries reported 66.3 percent (4.60 billion pounds) of the total quantity released on- and off-site by all industries.

Of the 31.73 billion pounds of TRI chemicals managed in 2000 by the original industries, 43.4 percent (13.78 billion pounds) was treated on-site. Another 30.4 percent (9.65 billion pounds) was recycled on-site. Recycled off-site, energy recovery on- and off-site, treated off-site, and releases on- and off-site accounted for the remaining 26.2 percent.

Of the 6.15 billion pounds of TRI chemicals managed in 2000 by the new industries, 74.8 percent (just over 4.59 billion pounds) was released on- and off-site and 16.3 percent (just over 1 billion pounds) was treated on-site. The remaining 8.9 percent was

Table 2-2: Quantities of TRI Chemicals in Waste by Waste Management Activity, Original (Manufacturing) and New Industries, 2000

Waste Management Activity	Original Industries		New Industries		All TRI Industries		New Industries as Percent of All TRI Industries
	Pounds	Percent	Pounds	Percent	Pounds	Percent	Percent
Recycled On-site	9,653,794,985	30.4	195,551,210	3.2	9,849,346,195	26.0	2.0
Recycled Off-site	2,159,966,719	6 8	33,176,920	0 5	2,193,143,639	5 8	1 5
Energy Recovery On-site	2,686,643,776	8.5	7,045,642	0.1	2,693,689,418	7.1	0.3
Energy Recovery Off-site	549,039,983	1 7	266,124,188	4 3	815,164,171	2.2	32 6
Treated On-site	13,778,146,072	43.4	1,002,815,347	16.3	14,780,961,420	39.0	6.8
Treated Off-site	571,131,526	1 8	47,733,528	0 8	618,865,054	1 6	7 7
Quantity Released On- and Off-site	2,335,337,556	7.4	4,599,691,226	74.8	6,935,028,782	18.3	66.3
Total Production-related Waste Managed	**31,734,060,618**	**100.0**	**6,152,138,062**	**100.0**	**37,886,198,679**	**100.0**	**16.2**
Non-production-related Waste Managed	39,973,193		224,105,347		264,078,540		84.9

Note· Data are from Section 8 of Form R for 2000.

Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

One facility, Phelps Dodge Miami of Claypool, AZ, that reported under SIC code 33 and SIC code 10 in 2000 and previous years has been included in the new industry category SIC code 10 for the purpose of this analysis

recycled on- and off-site, burned for energy recovery on- and off-site, or treated off-site.

Transfers Off-site for Further Waste Management/Disposal

As shown in Table 2-3, transfers off-site for further waste management and disposal in 2000 totaled just under 4.14 billion pounds among all TRI industries. Of that total, the original industries accounted for 89.1 percent (3.69 billion pounds), and the new industries accounted for 10.9 percent (453.1 million pounds).

In all TRI industries, over half of the transfers for further waste management and disposal was from transfers to recycling—just over 2.09 billion pounds. Transfers to energy recovery accounted for 19.3 percent (800.4 million pounds), and other off-site transfers to disposal accounted for 14.8 percent (610.8 million pounds).

Transfers to recycling accounted for 56.0 percent (2.06 billion pounds) of the transfers for further management and disposal by the original industries in 2000. Transfers to energy recovery accounted for 14.7 percent (542.5 million pounds), while other off-site transfers to disposal (not including transfers to POTWs of metals and metal compounds) were 13.3 percent (488.6 million pounds). Transfers to treatment, transfers to POTWs, and other off-site transfers comprised the remaining 16.0 percent.

Transfers to energy recovery accounted for 56.9 percent (257.9 million pounds) of the total off-site transfers for further waste management and disposal by the new industries in 2000. Off-site transfers to disposal (not including transfers to POTWs of metals and metal compounds) were 27.0 percent (122.2 million pounds) of the total off-site transfers for further waste management and disposal. Transfers to recycling, transfers to treatment, transfers to POTWs accounted for the remaining combined 16.1 percent of total transfers for further waste management and disposal.

Projections of TRI Chemicals in Waste and Source Reduction

As described in **Waste Management** in Chapter 1, on each Form R that it submits, a facility reports actual waste management quantities for the current and prior years and projected quantities for the next two years. TRI facilities (both original and new industries) projected a 1.6 percent increase in total production-related waste, from 37.89 billion pounds in 2000 to 38.49 billion pounds in 2002 (see Table 2-4.)

Table 2-3: TRI Off-site Transfers for Further Waste Management/Disposal, Original (Manufacturing) and New Industries, 2000

Type of Transfer	Original Industries		New Industries		All TRI Industries		New Industries as Percent of All TRI Industries
	Pounds	Percent	Pounds	Percent	Pounds	Percent	Percent
Transfers to Recycling	2,064,722,344	56.0	30,409,774	6 7	2,095,132,118	50.6	1.5
Transfers to Energy Recovery	542,491,264	14 7	257,859,893	56 9	800,351,157	19 3	32 2
Transfers to Treatment	242,879,243	6 6	39,285,277	8.7	282,164,520	6.8	13.9
Transfers to POTWs	337,225,110	9 1	3,386,348	0 7	340,611,459	8 2	1.0
Metals and Metal Compounds Only	3,153,650	0.1	40,549	0.0	3,194,199	0.1	1.3
Non-metal TRI Chemicals	334,071,460	9 1	3,345,800	0 7	337,417,260	8 2	1 0
Other Off-site Transfers*	10,628,445	0.3	6,750	0.0	10,635,195	0 3	0.1
Other Off-site Transfers to Disposal**	488,580,198	13 3	122,196,168	27 0	610,776,366	14 8	20.0
Total Transfers for Further Waste Management/Disposal	**3,686,526,604**	**100.0**	**453,144,211**	**100.0**	**4,139,670,815**	**100.0**	**10.9**

Note· Total Transfers Off-site for Further Waste Management/Disposal are from Section 6 of Form R

Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

One facility, Phelps Dodge Miami of Claypool, AZ, that reported under SIC code 33 and SIC code 10 in 2000 and previous years has been included in the new industry category SIC code 10 for the purpose of this analysis

* Other Off-site Transfers are transfers reported without a valid waste management code
** Does not include transfers to POTWs of metals and metal compounds

The original industries expected their total to increase by 3.6 percent, from 31.73 billion pounds in 2000 to 32.88 billion pounds in 2002, while the new industries expected their total production-related waste to decrease by 8.8 percent, from 6.15 billion pounds in 2000 to 5.61 billion pounds in 2002. The expected decreases would reduce the new industries' proportion of total production-related waste from all industries from 16.2 percent in 2000 to a projected 14.6 percent in 2002.

Quantities released on- and off-site are expected to decrease, for both original and new industries and for TRI industries as a whole. Releases on- and off-site represent the least-desirable option under the waste management hierarchy described in **Waste Management** in Chapter 1. The projected decrease of 8.8 percent in such releases—from 6.94 billion pounds in 2000 to 6.32 billion pounds in 2002 for all TRI industries—therefore represents a positive development in TRI facilities' waste management. For new industries the expected decrease would be 8.9 percent and for original industries 8.7 percent.

As shown in Table 2-5, TRI industries submitted 78,304 Form Rs, 15.5 percent of which (12,165 forms) reported source reduction activities. As noted in **Waste Management** in Chapter 1, source reduction—activity that prevents the generation of waste—is the preferred waste management option.

Good operating practices were the most frequently cited source reduction activity, with 7,051 forms reporting good operating practices during 2000. Process modifications were cited on 3,891 forms and spill and leak prevention on 3,166 forms.

The original industries accounted for over 89 percent of the reported source reduction activities: all of the surface preparation and finishing and 93.8 percent of the product modifications. Good operating practices were cited most frequently by electric utilities and chemical wholesale distributors while spill and leak prevention was by the petroleum terminals and bulk storage facilities.

TRI DATA FOR ORIGINAL AND NEW INDUSTRIES, 1998-2000

As shown in Table 2-6, the numbers of facilities reporting and of forms submitted were slightly lower, by 2 to 4 percent between 1999 and 2000 for TRI industries as a whole. The data used to com-

Table 2-4: Current Year and Projected Quantities of TRI Chemicals in Waste, Original (Manufacturing) and New Industries, 2000-2002

Waste Management Activity	Original Industries			New Industries		
	2000 Pounds	2001 Pounds	2002 Pounds	2000 Pounds	2001 Pounds	2002 Pounds
Recycled On-site	9,653,794,985	10,943,551,394	11,117,660,076	195,551,210	202,796,256	204,887,689
Recycled Off-site	2,159,966,719	2,153,142,168	2,091,310,140	33,176,920	29,021,924	29,084,705
Energy Recovery On-site	2,686,643,776	2,686,510,762	2,696,940,447	7,045,642	6,656,802	6,663,060
Energy Recovery Off-site	549,039,983	522,332,195	493,309,526	266,124,188	197,678,806	201,219,234
Treated On-site	13,778,146,072	13,430,834,085	13,800,528,890	1,002,815,347	940,954,808	934,280,186
Treated Off-site	571,131,526	543,528,000	549,510,895	47,733,528	41,761,947	41,797,393
Quantity Released On- and Off-site	2,335,337,556	2,189,276,304	2,132,294,892	4,599,691,226	4,179,927,776	4,190,141,292
Total Production-related Waste Managed	**31,734,060,618**	**32,469,174,909**	**32,881,554,865**	**6,152,138,062**	**5,598,798,319**	**5,608,073,557**
	All TRI Industries			**Projected Change 2000-2002**		
Waste Management Activity	**2000** Pounds	**2001** Pounds	**2002** Pounds	**Original Industries** Percent	**New Industries** Percent	**All Industries** Percent
Recycled On-site	9,849,346,195	11,146,347,650	11,322,547,765	15 2	4.8	15.0
Recycled Off-site	2,193,143,639	2,182,164,092	2,120,394,845	-3 2	-12 3	-3 3
Energy Recovery On-site	2,693,689,418	2,693,167,564	2,703,603,507	0.4	-5.4	0.4
Energy Recovery Off-site	815,164,171	720,011,001	694,528,760	-10 2	-24 4	-14 8
Treated On-site	14,780,961,420	14,371,788,892	14,734,809,075	0.2	-6.8	-0.3
Treated Off-site	618,865,054	585,289,948	591,308,288	-3 8	-12 4	-4 5
Quantity Released On- and Off-site	6,935,028,782	6,369,204,080	6,322,436,183	-8 7	-8 9	-8 8
Total Production-related Waste Managed	**37,886,198,679**	**38,067,973,228**	**38,489,628,422**	**3.6**	**-8.8**	**1.6**

Note: Current year (2000) and projected (2001 and 2002) amounts are from Section 8 of Form R for 2000

Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

One facility, Phelps Dodge Miami of Claypool, AZ, that reported under SIC code 33 and SIC code 10 in 2000 and previous years has been included in the new industry category SIC code 10 for the purpose of this analysis

Table 2-5: Forms Reporting Source Reduction Activity, by Category, Original (Manufacturing) and New Industries, 2000

SIC Code	Industry	Total Form Rs Number	Forms Reporting Source Reduction Activity: Number	Forms Reporting Source Reduction Activity: Percent of All Form Rs Percent	Category of Source Reduction Activity: Good Operating Practices Number	Inventory Control Number	Spill and Leak Prevention Number	Raw Materials Modifications Number	Process Modifications Number	Cleaning and Degreasing Number	Surface Preparation and Finishing Number	Product Modifications Number
20-39	Original Industries	63,573	10,869	17 1	6,095	1,392	2,690	1,623	3,704	615	1,088	798
10	Metal Mining	655	24	3 7	4	1	4	0	14	0	0	1
12	Coal Mining	203	0	0 0	0	0	0	0	0	0	0	0
491/493	Electric Utilities	6,038	497	8 2	344	63	41	96	61	0	0	1
5169	Chemical Wholesale Distributors	1,871	237	12 7	143	36	130	11	30	24	0	2
5171	Petroleum Terminals/Bulk Storage	3,499	188	5 4	100	26	160	0	48	16	0	7
4953/7389	Hazardous Waste/Solvent Recovery	2,465	350	14.2	365	0	141	0	34	0	0	3
	Total	**78,304**	**12,165**	**15.5**	**7,051**	**1,518**	**3,166**	**1,730**	**3,891**	**655**	**1,088**	**812**

Note: All source reduction activities on a form are counted in the corresponding category Totals do not equal the sum of the categories because forms may report more than one source reduction activity

Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

One facility, Phelps Dodge Miami of Claypool, AZ, that reported under SIC code 33 and SIC code 10 in 2000 and previous years has been included in the new industry category SIC code 10 for the purpose of this analysis

pare 1998, 1999 and 2000 do not include the PBT chemicals or vanadium or vanadium compounds since some PBT chemicals and vanadium compounds were added to the TRI list of chemicals in 2000 and the reporting definition for vanadium changed and the reporting thresholds for all PBT chemicals changed. Chapter 3 examines in more detail reporting on PBT chemicals in 2000.

On- and Off-site Releases, 1998-2000

On- and off-site releases in 2000 for all TRI industries totaled 7.00 billion pounds, a decrease from 7.65 billion pounds in 1999, or 8.4 percent. From 1999 to 2000, total releases by the new industries decreased by 11.0 percent, from 5.32 billion pounds to 4.73 billion pounds. Total releases by original industries, decreased from 1999 to 2000 by 2.6 percent, from 2.33 billion pounds to 2.27 billion pounds.

After increasing from 1998 to 1999 and then falling from 1999 to 2000, for the three-year period 1998-2000, total on- and off-site releases fell 5.1 percent in the new industries. Total on- and off-site releases fell 6.4 percent in the original industries. Overall total on- and off-site releases decreased 5.5 percent for all TRI industries. The increase from 1998 to 1999 was due to reporting by the new industries.

On-site releases from all TRI industries declined in 2000 to 6.49 billion pounds from 7.19 billion pounds in 1999, a decrease of 9.8 percent. The original industries' on-site releases fell from 1.98 billion pounds in 1999 to 1.86 billion pounds in 2000, by 5.8 percent. The new industries' on-site releases decreased by 11.2 percent, from 5.21 billion pounds in 1999 to 4.63 billion pounds in 2000.

For the three-year period 1998-2000, total on-site releases fell 10.5 percent in the original industries and 5.4 percent in the new industries for a combined decrease of 6.9 percent for all TRI industries. On-site releases for all industries rose from 1998 to 1999 and then decreased. The increase from 1998 to 1999 was due to reporting by the new industries. (See Figures 2-2 and 2-3.)

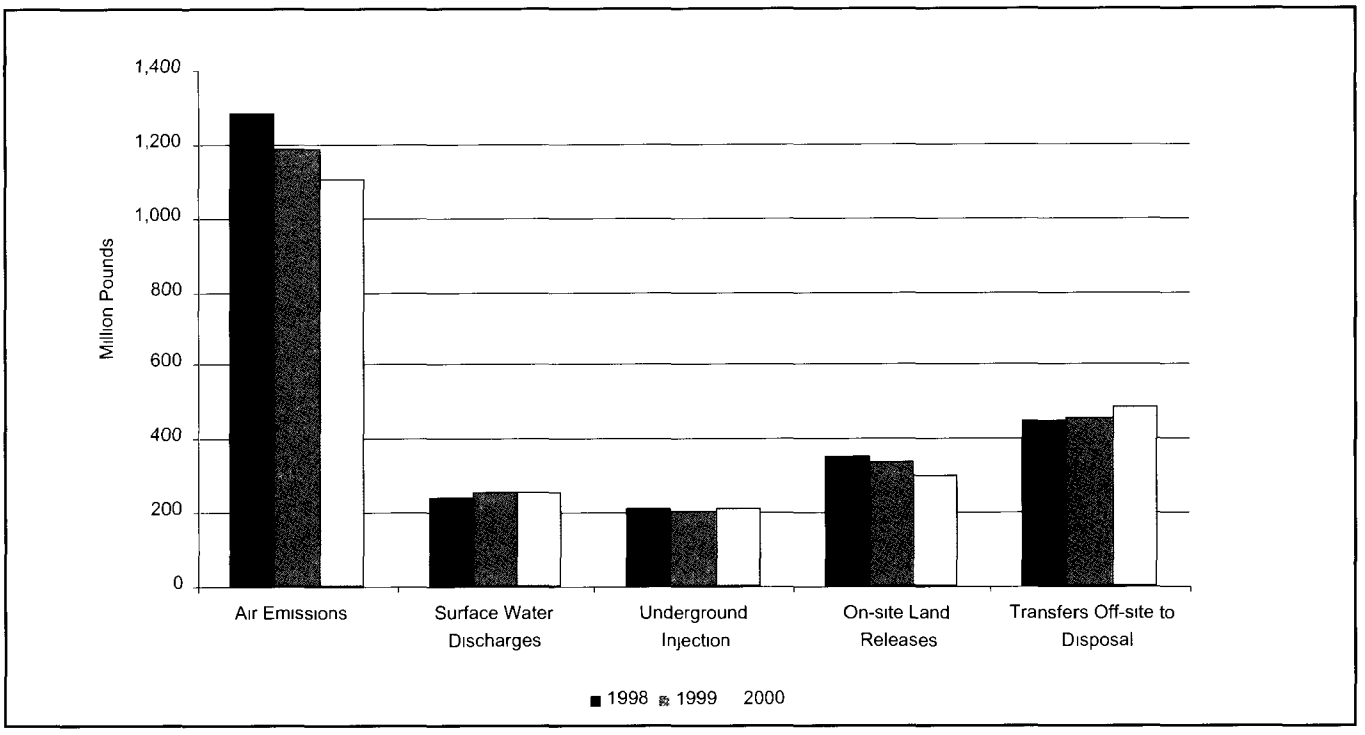
The new industries saw the largest decline in on-site releases from land releases from 1999 to 2000. On-site land releases fell by 541.7 million pounds or 12.6 percent, from 4.29 billion pounds in 1999 to 3.75 billion pounds in 2000. Air emissions saw the second largest decline by new industries falling 6.8 percent, or nearly 58.0 million pounds led by a drop in point-source air emissions of 57.2 million pounds. The largest increase in on-site releases in the new industries came from underground injection, which rose 23.4 percent, but the quantities involved were somewhat smaller—13.6 million pounds increase from 1999 to 2000.

For the original industries, all the main categories of release declined in quantity, except for underground injection, which increased 2.6 percent. The largest decrease was in air emissions, which decreased by 79.6 million pounds, or 6.7 percent, from 1.18 billion pounds in 1999 to 1.10 billion pounds in 2000.

Off-site releases reported by both original industries and the new industries increased from 1999 to 2000. Off-site releases (transfers off-site to disposal) for all TRI industries rose 12.5 percent, from 456.0 million pounds in 1999 to 513.0 million pounds in 2000.

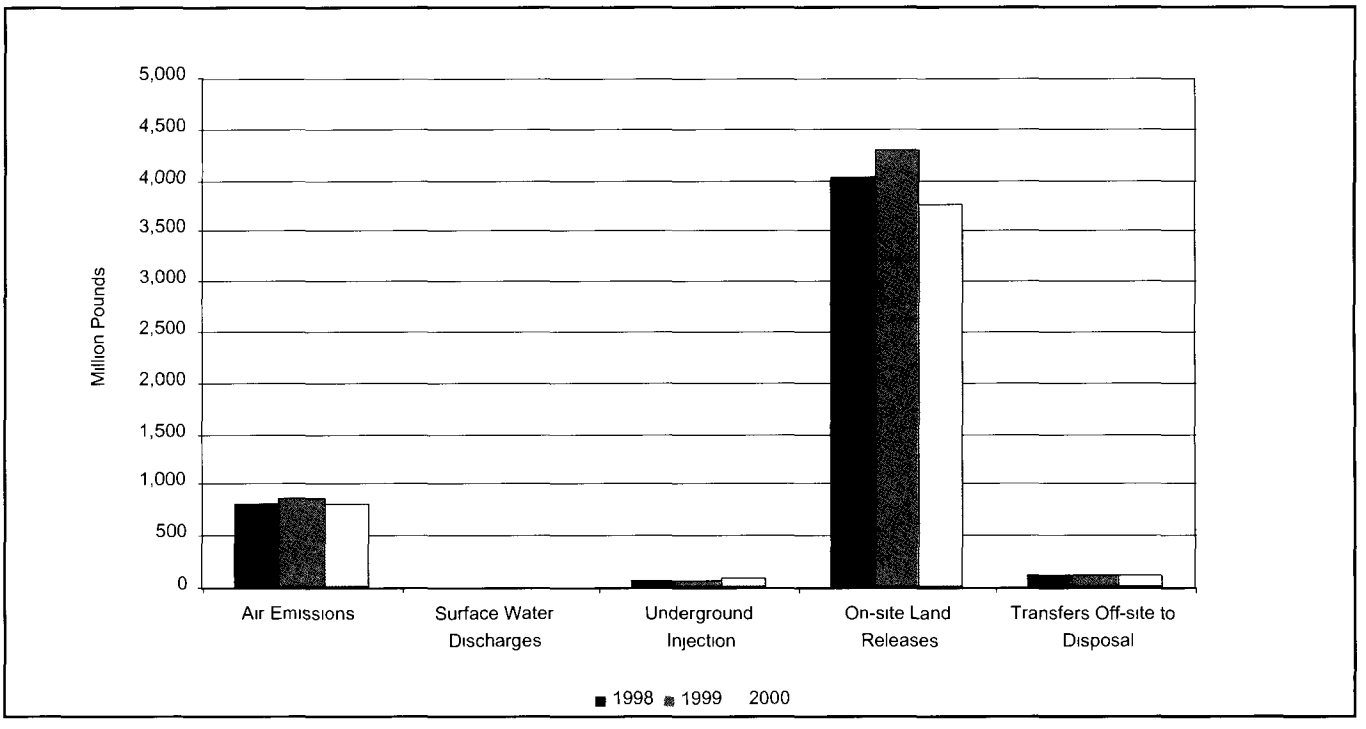
The original industries reported off-site releases of 350.0 million pounds in 1999 and 404.7 million pounds in 2000, a 15.6 percent increase. The main categories in which the original industries reported increases were solidification/stabilization, which increased 33.0 million pounds, a 65.3 percent increase, and landfills/surface impoundments, which increased 20.8 million pounds, a 9.6 percent increase. Storage only increased by 30.6 percent, almost 2.0 million pounds, and underground injection and wastewater treatment (excluding POTWs) had modest increases. The only categories of off-site releases by the original industries to register decreases were other land disposal (down 3.9 million pounds), other off-site management (down 3.1 million pounds), and transfers to POTWs (down 1,400 pounds).

Figure 2-2: Distribution of TRI On-site and Off-site Releases, Original Industries, 1998-2000



Note: Does not include PBT chemicals, vanadium and vanadium compounds **On-site Releases** are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs.

Figure 2-3: Distribution of TRI On-site and Off-site Releases, New Industries, 1998-2000



Note: Does not include PBT chemicals, vanadium and vanadium compounds **On-site Releases** are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

Table 2-6: TRI On-site and Off-site Releases, Original (Manufacturing) and New Industries, 1998-2000

	Original Industries					New Industries				
	1998	1999	2000	Change 1999-2000	Change 1998-2000	1998	1999	2000	Change 1999-2000	Change 1998-2000
	Number	Number	Number	Percent	Percent	Number	Number	Number	Percent	Percent
Total Facilities	21,575	21,089	20,789	-1 4	-3 6	1,982	1,949	2,006	2 9	1 2
Total Forms	71,492	70,276	69,733	-0 8	-2 5	15,001	14,572	14,349	-1 5	-4 3
Form Rs	61,077	59,935	59,187	-1 2	-3 1	12,365	12,088	11,701	-3 2	-5 4
Form As	10,415	10,341	10,546	2 0	1 3	2,636	2,484	2,648	6 6	0 5
	Pounds	Pounds	Pounds	Percent	Percent	Pounds	Pounds	Pounds	Percent	Percent
On-site Releases										
Total Air Emissions	1,277,155,829	1,184,024,043	1,104,442,103	-6 7	-13 5	810,750,237	853,535,229	795,560,618	-6 8	-1 9
Fugitive Air Emissions	298,429,681	269,152,806	249,329,161	-7 4	-16 5	7,037,092	6,502,027	5,716,185	-12 1	-18 8
Point Source Air Emissions	978,726,148	914,871,237	855,112,942	-6 5	-12 6	803,713,145	847,033,202	789,844,433	-6 8	-1 7
Surface Water Discharges	240,910,126	256,457,046	255,054 853	-0 5	5 9	7,181,525	4,999,744	5,213,657	4 3	-27 4
Underground Injection	210,831,862	200,786,511	206,084,829	2 6	-2 3	56,688,648	58,114,841	71,728,935	23 4	26 5
Class I Wells	210,651,959	200,624,023	205,858,154	2 6	-2 3	23,516,655	22,861,227	33,915,985	48 4	44 2
Class II-V Wells	179,903	162,488	226,675	39 5	26 0	33,171,993	35,253,614	37,812,950	7 3	14 0
On-site Land Releases	352,062,146	336,786,793	296,873,973	-11 9	-15 7	4,013,016,076	4,294,805,255	3,753,134,552	-12 6	-6 5
RCRA Subtitle C Landfills	15,277,761	14,078,096	10,456,759	-25 7	-31 6	203,422,089	195,552,557	193,573,615	-1 0	-4 8
Other On-site Landfills	336,784,385	322,708,697	286,417,214	-11 2	-15 0	3,809 593,987	4,099,252,698	3,559,560,937	-13 2	-6 6
Total On-site Releases	**2,080,959,963**	**1,978,054,393**	**1,862,455,758**	**-5.8**	**-10.5**	**4,887,636,486**	**5,211,455,069**	**4,625,637,761**	**-11.2**	**-5.4**
Off-site Releases										
Storage Only*	5,718,994	6,409,809	8,368,501	30 6	46 3	2,716,588	786,178	836,341	6 4	-69 2
Solidification/Stabilization** Metal and Metal Compounds Only	47,555,111	50,484,555	83,461,022	65 3	75 5	4 717,403	5,601,927	8,134,367	45 2	72 4
Wastewater Treatment (Excluding POTWs)*** Metal and Metal Compounds Only	2,737,129	6,454,669	6,633,921	2 8	142 4	115,134	180,483	342,626	89 8	197 6
Transfers to POTWs**** Metal and Metal Compounds Only	3,339,395	3,144,502	3,143,092	0 0	-5 9	359,202	22,833	40,422	77 0	-88 7
Underground Injection	7,932,893	22,143,601	23,259,461	5 0	193 2	343,674	2,780,073	415,919	-85 0	21 0
Landfills/Surface Impoundments	228,147,265	216,271,855	237,107,755	9 6	3 9	69,977,544	64,499,355	75,294,090	16 7	7 6
Land Treatment	1,703,321	4,301,369	4,864,479	13 1	185 6	487,775	598,919	855,389	42 8	75 4
Other Land Disposal	15,405,032	14,225,321	10,332,633	-27 4	-32 9	12,360,274	10,828,416	10,942,491	1 1	-11 5
Other Off-site Management	10,282,696	11,166,472	8,088,498	-27 6	-21 3	9,012,914	17,666,970	9,036 128	-48 9	0 3
Transfers to Waste Broker for Disposal	13,943,110	11,743,932	14,412,045	22 7	3 4	883,644	2,505,848	1,608,459	-35 8	82 0
Unknown*****	3,612,309	3,674,761	4,991,390	35 8	38 2	452,741	535,880	875,480	63 4	93 4
Transfers Off-site to Disposal (Transfers Off-site to Disposal)	**340,377,256**	**350,020,845**	**404,662,797**	**15 6**	**18 9**	**101,426,892**	**106,006,883**	**108,381,711**	**2 2**	**6 9**
Total On- and Off-site Releases	**2,421,337,219**	**2,328,075,238**	**2,267,118,555**	**-2 6**	**-6.4**	**4,989,063,378**	**5,317,461,952**	**4,734,019,472**	**-11.0**	**-5.1**

Note: Does not include PBT chemicals, vanadium and vanadium compounds **On-site Releases** are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI facilities that reported the amount as an on-site release

Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

One facility, Phelps Dodge Miami of Claypool, AZ, that reported under SIC code 33 and SIC code 10 in 2000 and previous years has been included in the new industry category SIC code 10 for the purpose of this analysis

* Storage only (disposal code M10) indicates that the toxic chemical is sent off-site for storage because there is no known disposal method Amounts reported as transferred to storage only are included as a form of disposal (off-site release) See Box 1-5

** Beginning in reporting year 1997, transfers to solidification/stabilization of metals and metal compounds (waste treatment code M41) are reported separately from transfers to solidification/stabilization of non-metal TRI chemicals (waste treatment code M40) Because this treatment method prepares a metal for disposal, but does not destroy it, such transfers are included as a form of disposal (off-site release) See Box 1-6 Reports under code M40 of metals and metal compounds have been included in solidification/stabilization of metals and metal compounds in this report

*** Beginning in reporting year 1997, transfers to wastewater treatment (excluding POTWs) of metals and metal compounds (waste treatment code M61) are reported separately from transfers to wastewater treatment of non-metal TRI chemicals (waste treatment code M60) Because wastewater treatment does not destroy metals, such transfers are included as a form of disposal (off-site release) See Box 1-6 Transfers of metals and metal compounds reported under code M60 have been included in transfers of metals and metal compounds to wastewater treatment

**** Reported as discharges to POTWs in Section 6 1 of Form R EPA considers transfers of metals and metal compounds to POTWs as an off-site release because sewage treatment does not destroy the metal content of the waste material.

***** Unknown (disposal code M99) indicates that a facility is not aware of the type of waste management used for the toxic chemical that is sent off-site Amounts reported as unknown transfers are treated as a form of disposal (off-site release)

Table 2-6: TRI On-site and Off-site Releases, Original (Manufacturing) and New Industries, 1998-2000 (continued)

	All TRI Industries				
	1998	1999	2000	Change 1999-2000	Change 1998-2000
	Number	Number	Number	Percent	Percent
Total Facilities	23,557	23,038	22,795	-1 1	-3 2
Total Forms	86,493	84,848	84,082	-0 9	-2 8
Form Rs	73,442	72,023	70,888	-1 6	-3 5
Form As	13,051	12,825	13,194	2 9	1 1
	Pounds	Pounds	Pounds	Percent	Percent
On-site Releases					
Total Air Emissions	2,087,906,066	2,037,559,272	1,900,002,721	-6 8	-9 0
Fugitive Air Emissions	305,466,773	275,654,833	255,045,346	-7 5	-16 5
Point Source Air Emissions	1,782,439,292	1,761,904,439	1,644,957,375	-6 6	-7.7
Surface Water Discharges	248,091,651	261,456,790	260,268,510	-0 5	4 9
Underground Injection	267,520,510	258,901,352	277,813,764	7 3	3 8
Class I Wells	234,168,614	223,485,250	239,774,139	7 3	2 4
Class II-V Wells	33,351,896	35,416,102	38,039,625	7 4	14 1
On-site Land Releases	4,365,078,222	4,631,592,048	4,050,008,524	-12 6	-7 2
RCRA Subtitle C Landfills	218,699,850	209,630,653	204,030,374	-2 7	-6 7
Other On-site Landfills	4,146,378,372	4,421,961,395	3,845,978,150	-13 0	-7 2
Total On-site Releases	**6,968,596,449**	**7,189,509,462**	**6,488,093,519**	**-9.8**	**-6.9**
Off-site Releases					
Storage Only*	8,435,582	7,195,987	9,204,842	27 9	9 1
Solidification/Stabilization** Metal and Metal Compounds Only	52,272,514	56,086,482	91,595,389	63 3	75 2
Wastewater Treatment (Excluding POTWs)*** Metal and Metal Compounds Only	2,852,263	6,635,152	6,976,547	5 1	144 6
Transfers to POTWs**** Metal and Metal Compounds Only	3,698,597	3,167,335	3,183,514	0 5	-13 9
Underground Injection	8,276,566	24,923,675	23,675,380	-5 0	186 1
Landfills/Surface Impoundments	298,124,809	280,771,211	312,401,845	11 3	4 8
Land Treatment	2,191,096	4,900,288	5,719,868	16 7	161 1
Other Land Disposal	27,765,306	25,053,737	21,275,124	-15 1	-23 4
Other Off-site Management	19,295,611	28,833,442	17,124,626	-40 6	-11 3
Transfers to Waste Broker for Disposal	14,826,754	14,249,780	16,020,504	12 7	9 3
Unknown*****	4,065,050	4,210,641	5,866,870	37 5	37 6
Transfers Off-site to Disposal (Transfers Off-site to Disposal)	**441,804,147**	**456,027,728**	**513,044,508**	**12.5**	**16.1**
Total On- and Off-site Releases	**7,410,400,596**	**7,645,537,190**	**7,001,138,027**	**-8.4**	**-5.5**

Note: Does not include PBT chemicals, vanadium and vanadium compounds **On-site Releases** are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. **Off-site Releases** do not include transfers to disposal sent to other TRI facilities that reported the amount as an on-site release

* Storage only (disposal code M10) indicates that the toxic chemical is sent off-site for storage because there is no known disposal method Amounts reported as transferred to storage only are included as a form of disposal (off-site release) See Box 1-5

** Beginning in reporting year 1997, transfers to solidification/stabilization of metals and metal compounds (waste treatment code M41) are reported separately from transfers to solidification/stabilization of non-metal TRI chemicals (waste treatment code M40) Because this treatment method prepares a metal for disposal, but does not destroy it, such transfers are included as a form of disposal (off-site release) See Box 1-6 Reports under code M40 of metals and metal compounds have been included in solidification/stabilization of metals and metal compounds in this report

*** Beginning in reporting year 1997, transfers to wastewater treatment (excluding POTWs) of metals and metal compounds (waste treatment code M61) are reported separately from transfers to wastewater treatment of non-metal TRI chemicals (waste treatment code M60) Because wastewater treatment does not destroy metals, such transfers are included as a form of disposal (off-site release) See Box 1-6 Transfers of metals and metal compounds reported under code M60 have been included in transfers of metals and metal compounds to wastewater treatment

**** Reported as discharges to POTWs in Section 6 1 of Form R EPA considers transfers of metals and metal compounds to POTWs as an off-site release because sewage treatment does not destroy the metal content of the waste material

***** Unknown (disposal code M99) indicates that a facility is not aware of the type of waste management used for the toxic chemical that is sent off-site Amounts reported as unknown transfers are treated as a form of disposal (off-site release)

Table 2-7: Quantities of TRI Chemicals in Waste by Waste Management Activity, Original (Manufacturing) and New Industries, 1998-2000

	Original Industries					New Industries				
Waste Management Activity	1998 Pounds	1999 Pounds	2000 Pounds	Change 1999-2000 Percent	Change 1998-2000 Percent	1998 Pounds	1999 Pounds	2000 Pounds	Change 1999-2000 Percent	Change 1998-2000 Percent
Recycled On-site	8,385,540,278	7,760,371,765	9,648,793,825	24 3	15.1	203,076,708	199,404,215	195,466,701	-2 0	-3 7
Recycled Off-site	2,104,267,249	2,170,640,184	2,155,918,552	-0 7	2 5	36,994,728	36,793,121	32,838,059	-10 7	-11 2
Energy Recovery On-site	2,733,353,748	2,807,080,971	2,678,931,507	-4 6	-2.0	11,399,201	10,762,603	7,044,038	-34.6	-38 2
Energy Recovery Off-site	490,658,304	513,659,423	548,777,370	6 8	11 8	412,406,220	270,806,332	266,104,594	-1 7	-35 5
Treated On-site	5,959,218,668	7,426,442,587	13,755,052,371	85 2	130 8	808,546,067	912,997,890	979,399,297	7 3	21 1
Treated Off-site	596,249,888	548,518,807	570,596,827	4 0	-4 3	90,263,036	72,354,931	47,475,922	-34 4	-47 4
Quantity Released On- and Off-site	2,498,382,894	2,416,857,735	2,318,298,838	-4 1	-7 2	4,999,898,097	4,813,430,648	4,520,758,586	-6 1	-9 6
Total Production-related Waste Managed	**22,767,671,028**	**23,643,571,472**	**31,676,369,292**	**34.0**	**39.1**	**6,562,584,057**	**6,316,549,740**	**6,049,087,197**	**-4.2**	**-7.8**
Non-production-related Waste Managed	26,278,484	305,689,636	39,828,556	-87 0	51.6	1,611,653	506,552,315	220,800,646	-56.4	13,600 3

Note: Does not include PBT chemicals, vanadium and vanadium compounds Data are from Section 8 of Form R for year indicated

Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

One facility, Phelps Dodge Miami of Claypool, AZ, that reported under SIC code 33 and SIC code 10 in 2000 and previous years has been included in the new industry category SIC code 10 for the purpose of this analysis

Total off-site releases from facilities in the new industries rose from 106.0 million pounds in 1999 to 108.4 million pounds in 2000, a 2.2 percent increase. The largest increase was landfills/surface impoundments, which increased 10.8 million pounds, or 16.7 percent. Solidification/stabilization had the next largest increase, 2.5 million pounds, a 45.2 percent increase. By contrast, other off-site management fell by 8.6 million pounds, and underground injection fell by 2.4 million pounds. Transfers to waste brokers also had a modest decrease of nearly 862,100 pounds. All other major categories had modest increases.

For the three-year period, 1998-2000, off-site releases for all TRI industries increased by 16.1 percent, 71.2 million pounds. The largest component of this increase was in solidification/stabilization, which increased by 39.2 million pounds or 75.2 percent. Off-site releases to underground injection increased by 15.4 million pounds or 186.2 percent and off-site releases to landfills/surface impoundments increased by 14.3 million pounds or 4.8 percent.

Waste Management Data, 1998-2000

Quantities of TRI Chemicals in Waste, 1998-2000

Table 2-7 compares the quantities of TRI chemicals in waste for original and new industries for the years 1998-2000. Total production-related waste for all TRI industries in 2000 was 37.73 billion pounds, an increase of 25.9 percent from 1999. The quantities of TRI chemicals managed in waste increased 28.6 percent from 1998 to 2000.

The original industries reported production-related waste totaling 31.68 billion pounds in 2000, up from 23.64 billion pounds in 1999, an increase of 34.0 percent. The original industries had an overall increase in production-related waste of 8.91 billion pounds or 39.1 percent for the three-year period 1998-2000. Two facilities in the chemical manufacturing industry accounted for most of this increase; one facility in Louisiana reported an increase of 5.78 billion pounds from 1999 to 2000 and one facility in Alabama reporting for the first time in 2000 reported a total of 2.10 billion pounds.

For the new industries, production-related waste amounted to 6.05 billion pounds in 2000, a decrease

Table 2-7: Quantities of TRI Chemicals in Waste by Waste Management Activity, Original (Manufacturing) and New Industries, 1998-2000 (continued)

Waste Management Activity	All TRI Industries				
	1998 Pounds	1999 Pounds	2000 Pounds	Change 1999-2000 Percent	Change 1998-2000 Percent
Recycled On-site	8,588,616,986	7,959,775,980	9,844,260,526	23 7	14.6
Recycled Off-site	2,141,261,977	2,207,433,305	2,188,756,611	-0 8	2 2
Energy Recovery On-site	2,744,752,949	2,817,843,574	2,685,975,545	-4 7	-2 1
Energy Recovery Off-site	903,064,524	784,465,755	814,881,964	3 9	-9 8
Treated On-site	6,767,764,735	8,339,440,477	14,734,451,668	76 7	117 7
Treated Off-site	686,512,924	620,873,738	618,072,750	-0 5	-10 0
Quantity Released On- and Off-site	7,498,280,991	7,230,288,383	6,839,057,424	-5 4	-8 8
Total Production-related Waste Managed	**29,330,255,085**	**29,960,121,212**	**37,725,456,489**	**25 9**	**28.6**
Non-production-related Waste Managed	27,890,137	812,241,951	260,629,202	-67 9	834.5

Note: Does not include PBT chemicals, vanadium and vanadium compounds Data are from Section 8 of Form R for year indicated

of 4.2 percent from 1999. New industries' production-related waste decreased throughout the three-year period 1998-2000, for an overall reduction of 7.8 percent or 513.5 million pounds.

The amount of production-related waste treated on-site for all TRI industries increased by 76.7 percent between 1999 and 2000, from 8.34 billion pounds to 14.7 billion pounds. This was after an increase from 6.77 billion pounds in 1998 to the 8.34 billion pounds in 1999. The largest portion of the increase was due to increases of 7.80 billion pounds for original industries from 1998-2000. However, on-site treatment by new industries also increased, by 170.9 million pounds for the three-year period, 1998-2000.

On-site recycling also registered large increases. From 1999 to 2000, all TRI industries reported an increase of 1.88 billion pounds, or 23.7 percent, in on-site recycling. The original industries reported an increase of 1.89 billion pounds, 24.3 percent, in on-site recycling from 1999 to 2000. The new industries reported a decrease in on-site recycling from 1999 to 2000 of 3.9 million pounds or 2.0 percent. Likewise, for the three-year period, 1998-2000, the increase in on-site recycling was due to increases reported by the original industries of 1.26 billion pounds or 15.1 percent while the new industries reported an overall decrease of 7.6 million pounds or 3.7 percent.

Off-site recycling was the other type of waste management activity that registered an increase for the three-year period from 1998 to 2000. However, off-site recycling decreased from 1999 to 2000, by 18.7 million pounds or 0.8 percent. The increase in off-site recycling from 1998 to 2000 occurred in the original industries, which reported increases of 51.7 million pounds, 2.5 percent, during this period. The new industries reported decreases in off-site recycling of 4.2 million pounds, or 11.2 percent from 1998 to 2000.

The quantity of chemicals in waste released on- and off-site from 1999 to 2000 decreased overall. The decrease reported by the new industries was 292.7 million pounds, or 6.1 percent. The decrease by the original industries was 98.6 million pounds, or 4.1 percent. Releases on- and off-site also decreased over the three-year period, 1998-2000, by 659.2 million pounds, 8.8 percent, for all TRI industries, by 180.1 million pounds or 7.2 percent for the original industries and by 479.1 million pounds or 9.6 percent by the new industries.

Transfers Off-site for Further Waste Management/Disposal, 1998-2000

As shown in Table 2-8 transfers off-site for further waste management and disposal decreased slightly from 1999 to 2000 by 0.04 percent or 1.8 million pounds. Over the three-year period, 1998-2000, transfers off-site for further waste management and

Table 2-8: TRI Off-site Transfers for Further Waste Management/Disposal, Original (Manufacturing) and New Industries, 1998-2000

	Original Industries					New Industries				
Type of Transfer	1998 Pounds	1999 Pounds	2000 Pounds	Change 1999-2000 Percent	Change 1998-2000 Percent	1998 Pounds	1999 Pounds	2000 Pounds	Change 1999-2000 Percent	Change 1998-2000 Percent
Transfers to Recycling	2,039,193,067	2,123,230,926	2,060,661,857	-2 9	1 1	37,759,933	36,928,144	29,721,539	-19 5	-21 3
Transfers to Energy Recovery	483,616,887	516,501,118	542,228,596	5 0	12 1	429,535,326	264,792,051	257,839,548	-2 6	-40 0
Transfers to Treatment	255,153,901	235,794,275	242,413,085	2 8	-5 0	72,252,734	51,710,328	39,044,612	-24 5	-46 0
Transfers to POTWs	330,947,045	327,718,047	337,209,427	2 9	1 9	2,012,296	2,086,573	3,385,983	62 3	68 3
Metals and Metal Compounds Only	3,339,395	3,144,502	3,143,092	0 0	-5 9	359,202	22,833	40,422	77 0	-88 7
Non-metal TRI Chemicals	327,607,650	324,573,545	334,066,335	2 9	2 0	1,653,094	2,063,740	3,345,562	62 1	102 4
Other Off-site Transfers*	690,139	166,400	10,570,089	6,252 2	1,431 6	10,320	0	6,750	--	-34 6
Other Off-site Transfers to Disposal**	445,204,520	452,348,267	482,965,754	6 8	8 5	105,852,380	111,750,521	115,174,442	3 1	8 8
Total Transfers for Further Waste Management/Disposal	**3,554,805,559**	**3,655,759,032**	**3,676,048,807**	**0.6**	**3.4**	**647,422,989**	**467,267,617**	**445,172,874**	**-4 7**	**-31.2**

Note: Does not include PBT chemicals, vanadium and vanadium compounds **Total Transfers Off-site for Further Waste Management/Disposal** are from Section 6 of Form R

Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

One facility, Phelps Dodge Miami of Claypool, AZ, that reported under SIC code 33 and SIC code 10 in 2000 and previous years has been included in the new industry category SIC code 10 for the purpose of this analysis

* Other Off-site Transfers are transfers reported without a valid waste management code
** Does not include transfers to POTWs of metals and metal compounds

disposal decreased by 1.9 percent, from 4.20 billion pounds in 1998 to 4.12 billion pounds in 2000.

This decrease was due to reporting by the new industries, which registered a 4.7 percent decrease from 467.3 million pounds in 1999 to 445.2 million pounds in 2000 after decreasing from 647.4 million pounds in 1998. The percentage decrease for new industries was 31.2 percent from 1998 to 2000. Original industries reported increases in transfers off-site for further waste management and disposal of 0.6 percent, from 3.66 billion pounds in 1999 to 3.68 billion pounds in 2000, and an increase of 3.4 percent for the three-year period, 1998-2000, from 3.55 billion pounds in 1998.

Transfers to recycling registered the largest decrease of all types of transfers off-site for further waste management and disposal from 1999 to 2000. Transfers to recycling fell from 2.16 billion pounds in 1999 to 2.09 billion pounds in 2000, a 3.2 percent decrease. Transfers to recycling for all TRI industries did increase from 1998 to 1999, for an overall increase for the three-year period, 1998-2000, of 0.6 percent.

Transfers to recycling from new industries decreased by 19.5 percent, from 36.9 million pounds in 1999 to 29.7 million pounds in 2000. The overall change in transfers to recycling by the new industries was a decrease of 21.3 percent for the period 1998-2000. For the original industries, transfers to recycling decreased by 2.9 percent, from 2.12 billion pounds in 1999 to 2.06 billion pounds in 2000, but overall for the three-year period, 1998-2000, transfers to recycling from original industries increased by 1.1 percent.

The type of transfer with the largest increase was other off-site transfers to disposal (other than of metals and metal compounds to POTWs), which increased by 34.0 million pounds or 6.0 percent from 1999 to 2000 for all TRI industries. For the original industries, such transfers increased by 6.8 percent, from 452.3 million pounds in 1999 to 483.0 million pounds in 2000. The new industries reported 111.8 million pounds in 1999 and 115.2 million pounds in 2000, for an increase of 3.1 percent. Over the three-year period, 1998-2000, other off-site transfers to disposal increased by 8.5 percent from 551.1 million pounds in 1998 to 598.1 million pounds in 2000 for all TRI industries. Both the original industries and the new industries reported similar percentage increases of over 8.5 percent.

Table 2-8: TRI Off-site Transfers for Further Waste Management/Disposal, Original (Manufacturing) and New Industries, 1998-2000 (continued)

	All TRI Industries				
Type of Transfer	**1998** Pounds	**1999** Pounds	**2000** Pounds	**Change 1999-2000** Percent	**Change 1998-2000** Percent
Transfers to Recycling	2,076,953,000	2,160,159,070	2,090,383,396	-3.2	0.6
Transfers to Energy Recovery	913,152,213	781,293,169	800,068,144	2 4	-12 4
Transfers to Treatment	327,406,635	287,504,603	281,457,697	-2.1	-14.0
Transfers to POTWs	332,959,341	329,804,620	340,595,410	3 3	2 3
Metals and Metal Compounds Only	3,698,597	3,167,335	3,183,514	0.5	-13.9
Non-metal TRI Chemicals	329,260,744	326,637,285	337,411,896	3 3	2 5
Other Off-site Transfers*	700,459	166,400	10,576,839	6,256 3	1,410 0
Other Off-site Transfers to Disposal**	551,056,900	564,098,788	598,140,196	6 0	8 5
Total Transfers for Further Waste Management/Disposal	**4,202,228,548**	**4,123,026,649**	**4,121,221,682**	**-0.04**	**-1.9**

Note: Does not include PBT chemicals, vanadium and vanadium compounds **Total Transfers Off-site for Further Waste Management/Disposal** are from Section 6 of Form R

* Other Off-site Transfers are transfers reported without a valid waste management code
** Does not include transfers to POTWs of metals and metal compounds

Chapter 3
2000 Toxics Release Inventory Data for PBT Chemicals

Chapter 3
2000 Toxics Release Inventory Data for PBT Chemicals

Introduction

For the reporting year 2000, TRI was expanded to include certain new persistent bioaccumulative toxic (PBT) chemicals. In addition, reporting thresholds were lowered for both the newly-added PBT chemicals and certain PBT chemicals already on the TRI list. In a rule (64 FR 58666) finalized on October 29, 1999, EPA added six PBT chemicals and one PBT chemical compound category. Two of the chemicals were added to the Polycyclic Aromatic Compounds (PACs) category. The rule also lowered reporting thresholds for 15 PBT chemicals and three PBT chemical categories (see Box 3-1). This chapter of the 2000 Toxics Release Inventory Public Data Release presents detailed information on and TRI data for the PBT chemicals.

In a separate action, as part of this same rulemaking, EPA added vanadium compounds to the list of TRI chemicals and changed the reporting qualifier for vanadium (already on the list of TRI chemicals) from "fume or dust" to "except when contained in an alloy." Vanadium and vanadium compounds have not been classified as PBT chemicals.

Prior to the changes for the PBT chemicals, the reporting threshold for all chemicals had been 25,000 pounds for manufacturing or processing the chemical and 10,000 pounds if otherwise used. Because PBT chemicals persist and bioaccumulate in the environment, they have the potential to cause greater exposure to humans and the environment over a longer period of time, making even small quantities of these chemicals a concern. Therefore, EPA established lower thresholds for these chemicals. For those chemicals that are persistent and bioaccumulative, a threshold of 100 pounds manufactured, processed or otherwise used was established. For the subset of PBT chemicals that are *highly* persistent and *highly* bioaccumulative, a threshold of 10 pounds was established. In addition, because dioxins are highly persistent and highly bioaccumulative, but are generally produced in extremely small amounts, the threshold for dioxin and dioxin-like compounds was set at 0.1 grams, so that reporting would result.

This chapter provides an overview of 2000 TRI data for each group of PBT chemicals (see Box 3-1). Data analyses in this chapter begin with summary tables that present 2000 release and other waste management data for PBT chemicals. The chapter then presents separate sections on each PBT chemical group and its TRI data. In addition, to help put the TRI data in context, each section describes the chemical, its sources and uses, where and how the chemical ends up in the environment, general environmental and health issues, and efforts to reduce pollution from the chemical.

While the expansion of information on PBT chemical releases and other waste management through the TRI provides an invaluable source of environmental data, it is limited. TRI does not include all industrial sources or other sources of releases, for example agricultural applications of pesticides. Although, these chemicals are known to exist in the environment for long periods of time, TRI data do not supply information on exposure and risk, but rather on releases and other waste management that take place in a given calendar year. Chapter 1 explains the types of releases and other waste management activities, and it provides important information on factors and limitations to consider when using TRI data.

Box 3-1: PBT Chemicals on TRI list

CAS Number	PBT Chemicals	New for 2000	Reporting Threshold
—	**Dioxin and dioxin-like compounds category**	X	0.1 grams
	(including the following chemicals)		
67562-39-4	1,2,3,4,6,7,8-Heptachlorodibenzofuran		
55673-89-7	1,2,3,4,7,8,9-Heptachlorodibenzofuran		
70648-26-9	1,2,3,4,7,8-Hexachlorodibenzofuran		
57117-44-9	1,2,3,6,7,8-Hexachlorodibenzofuran		
72918-21-9	1,2,3,7,8,9-Hexachlorodibenzofuran		
60851-34-5	2,3,4,6,7,8-Hexachlorodibenzofuran		
39227-28-6	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin		
57653-85-7	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin		
19408-74-3	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin		
35822-46-9	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin		
39001-02-0	1,2,3,4,6,7,8,9-Octachlorodibenzofuran		
3268-87-9	1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin		
57117-41-6	1,2,3,7,8-Pentachlorodibenzofuran		
57117-31-4	2,3,4,7,8-Pentachlorodibenzofuran		
40321-76-4	1,2,3,7,8-Pentachlorodibenzo-p-dioxin		
51207-31-9	2,3,7,8-Tetrachlorodibenzofuran		
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin		
			(pounds)
	Mercury and mercury compounds		
7439-97-6	Mercury		10
—	Mercury compounds category		10
	Polycyclic aromatic compounds (PACs)		
191-24-2	Benzo(g,h,i)perylene	X	10
—	Polycyclic aromatic compounds category		
	(including the following chemicals)		100
56-55-3	Benzo(a)anthracene		
205-99-2	Benzo(b)fluoranthene		
205-82-3	Benzo(j)fluoranthene		
207-08-9	Benzo(k)fluoranthene		
206-44-0	Benzo(j,k)fluorene	X	
189-55-9	Benzo(r,s,t)pentaphene		

Box 3-1: PBT Chemicals on TRI list (continued)

CAS Number	PBT Chemicals	New for 2000	Reporting Threshold
218-01-9	Benzo(a)phenanthrene		
50-32-8	Benzo(a)pyrene		
226-36-8	Dibenzo(a,h)acridine		
224-42-0	Dibenzo(a,j)acridine		
53-70-3	Dibenzo(a,h)anthracene		
194-59-2	7H-Dibenzo(c,g)carbazole		
5385-75-1	Dibenzo(a,e)fluoranthene		
192-65-4	Dibenzo(a,e)pyrene		
189-64-0	Dibenzo(a,h)pyrene		
191-30-0	Dibenzo(a,l)pyrene		
57-97-6	7,12-Dimethylbenz(a)anthracene		
193-39-5	Indeno[1,2,3-cd]pyrene		
56-49-5	3-Methylcholanthrene	X	
3697-24-3	5-Methylchrysene		
5522-43-0	1-Nitropyrene		
1336-36-3	**Polychlorinated biphenyls (PCBs)**		10
	Pesticides		
309-00-2	Aldrin		100
57-74-9	Chlordane		10
76-44-8	Heptachlor		10
465-73-6	Isodrin		10
72-43-5	Methoxychlor		100
40487-42-1	Pendimethalin		100
8001-35-2	Toxaphene		10
1582-09-8	Trifluralin		100
	Other PBT chemicals		
118-74-1	Hexachlorobenzene		10
29082-74-4	Octachlorostyrene	X	10
608-93-5	Pentachlorobenzene	X	10
79-94-7	Tetrabromobisphenol A	X	100

Chemical Characteristics

Persistence

A chemical's persistence refers to the length of time the chemical can exist in the environment before being destroyed (i.e., transformed into another chemical species) by natural processes. The environmental media for which persistence is measured or estimated include air, water, soil, and sediment.

A distinction is made between persistence in a single medium (air, water, soil, sediment) and overall environmental persistence. Persistence in an individual medium is controlled by transport of the chemical to other media, as well as transformation to other chemical species. Persistence in the environment as a whole is a distinct concept based on the observations that the environment behaves as a set of interconnected media, and that a chemical substance released to the environment will become distributed in these media in accordance with the chemical's intrinsic (physical/chemical) properties and reactivity.

A common measure of persistence in an environmental medium is a chemical's half-life, or the amount of time necessary for half of the chemical present to be eliminated from the medium. If a toxic chemical meets any one of the media-specific criteria, it is considered to be persistent. However, in the PBT chemicals rulemaking, EPA did not classify chemicals as PBT chemicals based solely on the in air criterion.

Bioaccumulation

Bioaccumulation is a general term that is used to describe the process by which organisms may accumulate chemical substances in their bodies. Bioaccumulation can occur in plants, and animals, including humans.

EPA has defined bioaccumulation as the net accumulation of a substance by an organism as a result of uptake from all environmental sources. The nondietary accumulation of chemicals in aquatic organisms is referred to as bioconcentration. EPA has defined bioconcentration as the net accumulation of a substance by an aquatic organism as a result of uptake directly from the ambient water through gill membranes or other external body surfaces.

A chemical's potential to bioaccumulate can be quantified by measuring or predicting the chemical's bioaccumulation factor (BAF). The BAF is the ratio of a substance's concentration in tissue of an aquatic organism to its concentration in the ambient water, in situations where both the organism and its food are exposed and the ratio does not change substantially over time. A chemical's potential to bioaccumulate can also be quantified by measuring or predicting the chemical's bioconcentration factor (BCF). The BCF is the ratio of a substance's concentration in tissue of an aquatic organism to its concentration in the ambient water, in situations where the organism is exposed through water only and the ratio does not change substantially over time. Because BAFs consider the uptake of chemicals from all routes of exposure they are considered better predictors of the accumulation of chemicals within fish than BCFs which only consider uptake of chemicals directly from water.

Toxicity

EPCRA Section 313 provides toxicity criteria at Section 313(d)(2) to be used to determine whether a chemical should be added or deleted from the EPCRA Section 313 list of toxic chemicals. All of the chemicals listed as PBT chemicals, including dioxin and dioxin-like compounds, were either added based on these criteria or were on the initial EPCRA Section 313 list provided to EPA by Congress.

2000 TRI DATA FOR PBT CHEMICALS

As shown in Table 3-1, 6,901 forms were submitted for PBT chemicals. Over half of these forms were for polycyclic aromatic compounds.

On- and Off-site Releases

In 2000, TRI releases for all PBT chemicals totaled 12.1 million pounds, of which polycyclic aromatic compounds accounted for 5.4 million pounds, or

44.6 percent of total releases for all PBT chemicals (see Table 3-1). Almost 44.0 percent of the releases of PBT chemicals were released on-site to land, 38.9 percent were off-site releases (off-site transfers to disposal), and 17.8 percent were released to air. Polychlorinated biphenyls accounted for 1.4 million pounds of the 1.7 million pounds of on-site land releases to RCRA subtitle C landfills (79.9 percent). Mercury and mercury compounds accounted for 3.2 million pounds of the 3.6 million pounds of on-site releases to land that were not to RCRA subtitle C landfills (88.7 percent). Polycyclic aromatic compounds accounted for 3.1 million pounds of the 4.6 million pounds of off-site releases (68.6 percent). Polycyclic aromatic compounds also accounted for most of the air emissions and surface water discharges. Air emissions of polycyclic aromatic compounds were 1.9 million pounds or 88.8 percent of the total of 2.2 million pounds for all PBT chemicals. Surface water discharges of polycyclic aromatic compounds were 18,137 pounds or 85.1 percent of the total of 21,319 pounds for all PBT chemicals.

Thus, the various PBT chemicals were generally released in different ways. Over half of dioxin and dioxin-like compounds were off-site releases (off-site transfers to disposal). One-third of dioxin and dioxin-like compounds and 74.1 percent of mercury and mercury compounds were released on-site to land in sites other than RCRA subtitle C landfills. Polycyclic aromatic compounds were either transferred off-site to disposal (58.1 percent) or released to air (35.5 percent). Practically all of the polychlorinated biphenyls (93.9 percent) were released to on-site RCRA subtitle C landfills. For the group of pesticides, 40.9 percent of their total releases was as releases to on-site RCRA subtitle C landfills, 34.6 percent was as other types of on-site land releases and 16.5 percent was transferred off-site to disposal. For the four other PBT chemicals, 65.7 percent of total releases of this group were transferred off-site to disposal.

Table 3-1: TRI On-site and Off-site Releases, PBT Chemicals, 2000

			On-site Releases							Off-site Releases	
					Underground Injection		On-site Land Releases				
CAS Number	Chemical	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
		Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
	-- Dioxin and Dioxin-like compounds*	**1,274**	**11.51**	**4.58**	**0.63**	**0.27**	**10.81**	**73.46**	**101.24**	**118.85**	**220.09**
	*-- Dioxin and dioxin-like compounds (in grams)**	*1,274*	*5,217 775*	*2,075 634*	*284 112*	*121 080*	*4,903 737*	*33,313 286*	*45,915 624*	*53,898 465*	*99,814 089*
	Mercury and Mercury Compounds	**1,596**	**164,492 53**	**2,302 28**	**1,931 72**	**9,781 80**	**91,297 96**	**3,196,983 53**	**3,466,789.83**	**849,872.31**	**4,316,662 14**
7439-97-6	Mercury	566	29,833 13	392 31	1,121 00	255 70	20,280 78	18,164 40	70,047 32	24,490.28	94,537 60
	-- Mercury compounds	1,030	134,659 41	1,909 98	810 72	9,526 10	71,017 18	3,178,819 12	3,396,742 51	825,382 03	4,222,124 54
	Polycyclic Aromatic Compounds	**3,550**	**1,916,436.42**	**18,137.05**	**0 00**	**10,000.00**	**201,581.64**	**115,205 99**	**2,261,361 11**	**3,141,614 53**	**5,402,975 63**
191-24-2	Benzo(g,h,i)perylene	1,366	42,318 09	531 22	0 00	0 00	976 14	5,236 07	49,061 52	116,927 71	165,989 23
	-- Polycyclic aromatic compounds	2,184	1,874,118 34	17,605 83	0 00	10,000 00	200,605 50	109,969 93	2,212,299 59	3,024,686 82	5,236,986 40
1336-36-3	**Polychlorinated Biphenyls (PCBs)**	**171**	**5,854 15**	**28 82**	**0 60**	**0 00**	**1,371,343 20**	**57,544 00**	**1,434,770 77**	**26,146 07**	**1,460,916.85**
	Pesticides	**138**	**6,339 64**	**330 62**	**3 16**	**0 00**	**33,707 32**	**28,498 00**	**68,878.74**	**13,564 60**	**82,443 34**
309-00-2	Aldrin	11	0 79	0 00	0 00	0 00	2,342 00	0 00	2,342 79	2 58	2,345 37
57-74-9	Chlordane	21	13 70	0 00	0 00	0 00	8,947 74	0 00	8,961 44	828 59	9,790 03
76-44-8	Heptachlor	15	6 60	0 00	0 00	0 00	2,372 56	0 00	2,379 16	221 87	2,601 03
465-73-6	Isodrin	6	0 05	0 00	2 95	0 00	0 00	0 00	3 00	0 00	3 00
72-43-5	Methoxychlor	20	59 83	0 00	0 00	0 00	2,569 00	0 00	2,628 83	31 75	2,660 58
40487-42-1	Pendimethalin	18	733 54	329 00	0 00	0 00	332 00	20,343 00	21,737 54	9,555 00	31,292 54
8001-35-2	Toxaphene	16	20 98	1 62	0 21	0 00	5,928 02	0 00	5,950 83	176 14	6,126 97
1582-09-8	Trifluralin	31	5,504 15	0 00	0 00	0 00	11,216 00	8,155 00	24,875 15	2,748 67	27,623 82
	Other PBTs	**172**	**63,976 18**	**515 29**	**60 27**	**0.02**	**17,578 20**	**205,422 10**	**287,552.06**	**551,362.24**	**838,914 30**
118-74-1	Hexachlorobenzene	100	1,426 24	331 44	48 37	0 02	16,955 00	5,745 20	24,506 26	13,021 04	37,527 30
29082-74-4	Octachlorostyrene	4	0 00	0 00	0 00	0 00	0 00	148 30	148 30	436 90	585 20
608-93-5	Pentachlorobenzene	20	162 54	173 85	11 90	0 00	623 20	1,999 60	2,971.09	355 00	3,326 09
79-94-7	Tetrabromobisphenol A	48	62,387 41	10 00	0 00	0 00	0 00	197,529 00	259,926 41	537,549 30	797,475 71
	Total	**6,901**	**2,157,110 44**	**21,318.64**	**1,996 38**	**19,782 09**	**1,715,519 14**	**3,603,727 08**	**7,519,453 76**	**4,582,678 60**	**12,102,132 35**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

* The chemical category dioxin and dioxin-like compounds is reported in grams Where the category dioxin and dioxin-like compounds is shown on a table with other TRI chemicals, it is presented in pounds The grams are converted to pounds by multiplying by 0 002205

Table 3-2: Quantities of TRI Chemicals in Waste, PBT Chemicals, 2000

CAS Number	Chemical	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-production-related Waste Managed Pounds
	-- **Dioxin and Dioxin-like compounds***	9 81	0 01	0 04	4 40	550 18	71 16	233 09	868 69	59 15
	-- *Dioxin and dioxin-like compounds (in grams)**	*4,448 559*	*5 393*	*19 698*	*1,994 612*	*249,513 356*	*32,271 529*	*105,709 934*	*393,963 081*	*26,825 006*
	Mercury and Mercury Compounds	**646,940 05**	**161,929 47**	**77 73**	**126 01**	**19,768 28**	**5,864 61**	**4,041,157 67**	**4,875,863 82**	**18,143 88**
7439-97-6	Mercury	301,682 87	64,712 99	67 73	69 01	365 53	5,334 76	87,957 08	460,189 97	4,903 71
	-- Mercury compounds	345,257 18	97,216 48	10 00	57 00	19,402 75	529 84	3,953,200 59	4,415,673 84	13,240 17
	Polycyclic Aromatic Compounds	**2,932,858 97**	**622,842 53**	**7,570,145.81**	**212,142 99**	**25,600,382 12**	**257,264 86**	**5,744,191 79**	**42,939,829 07**	**64,717 07**
191-24-2	Benzo(g,h,i)perylene	100,105 08	9,925 22	1,804,355 26	5,656 33	1,451,368 24	2,665 42	167,216 09	3,541,291 65	639 53
	-- Polycyclic aromatic compounds	2,832,753 89	612,917 31	5,765,790 55	206,486 66	24,149,013 88	254,599 44	5,576,975 70	39,398,537 42	64,077 54
1336-36-3	**Polychlorinated Biphenyls (PCBs)**	**358 00**	**752 65**	**1,410 77**	**10,517 00**	**11,906,010 41**	**288,785 81**	**1,481,214 78**	**13,689,049.42**	**22,122 52**
	Pesticides	**11,501 00**	**0 00**	**1,569 00**	**983 00**	**2,312,740 17**	**140,172 19**	**87,061 74**	**2,554,027.10**	**45.00**
309-00-2	Aldrin	0 00	0 00	0 00	0 00	82,504 75	283 00	2,345 32	85,133 07	0 00
57-74-9	Chlordane	0 00	0 00	230 00	0 00	812,322 92	5,686 05	9,010 26	827,249 23	0 00
76-44-8	Heptachlor	0 00	0 00	42 00	0 00	237,739 73	3,773 30	2,394 03	243,949 06	0 00
465-73-6	Isodrin	0 00	0 00	0 00	0 00	6,603 84	0 00	3 00	6,606 84	0 00
72-43-5	Methoxychlor	0 00	0 00	225 00	755 00	290,474 16	431 60	2,682 64	294,568 40	0 00
40487-42-1	Pendimethalin	4,000 00	0 00	0 00	0 00	656,145 00	19,602 00	31,358 55	711,105 55	0 00
8001-35-2	Toxaphene	0 00	0 00	1,072 00	0 00	210,240 69	589 24	6,008 47	217,910 40	0 00
1582-09-8	Trifluralin	7,501 00	0 00	0 00	228 00	16,709 08	109,807 00	33,259 47	167,504 55	45 00
	Other PBTs	**6,605 50**	**12,450 00**	**140,662 00**	**58,434 00**	**6,504,174 17**	**28,488.96**	**839,475 17**	**7,590,289.80**	**21,754.65**
118-74-1	Tetrabromobisphenol A	6,000 50	12,039 00	140,662 00	56,585 00	6,154,926 17	19,461 15	48,420 58	6,438,094 40	21,752 30
29082-74-4	Hexachlorobenzene	0 00	0 00	0 00	0 00	19 00	3 00	585 20	604 20	0 00
608-93-5	Pentachlorobenzene	40 00	401 00	0 00	0 00	342,267 00	1,390 81	3,326 28	347,425 09	2 35
79-94-7	Octachlorostyrene	565 00	10 00	0 00	1,849 00	6 962 00	7,637 00	787,143 11	804,166 11	0 00
	Total	**3,598,273 32**	**797,974 66**	**7,713,865 36**	**282,207 40**	**46,343,625 33**	**720,647 59**	**12,193,334 24**	**71,649,927 90**	**126,842 27**

Note: Data are from Section 8 of Form R

* The chemical category dioxin and dioxin-like compounds is reported in grams Where the category dioxin and dioxin-like compounds is shown on a table with other TRI chemicals, it is presented in pounds The grams are converted to pounds by multiplying by 0 002205

Waste Management Data

Quantities of TRI Chemicals in Waste

Total production-related waste of PBT chemicals managed in 2000 was 71.6 million pounds, of which polycyclic aromatic compounds accounted for 42.9 million pounds, or 59.9 percent (see Table 3-2). Polychlorinated biphenyls totaled 13.7 million pounds of production-related waste managed, or 19.1 percent of the total for PBT chemicals.

Almost 64.7 percent of all production-related waste of PBT chemicals was treated on-site (46.3 million pounds). Another 17.0 percent was released on- and off-site, and 10.8 percent was used for energy recovery on-site.

While 25.6 million pounds (55.2 percent) of the on-site treatment of PBT chemicals was for the polycyclic aromatic compounds, 11.9 million pounds of polychlorinated biphenyls were treated on-site (25.7 percent of all on-site treatment), and 6.5 million pounds of the group of other PBT chemicals (mainly hexachlorobenzene) accounted for 14.0 percent of all on-site treatment of PBT chemicals in 2000.

Polycyclic aromatic compounds accounted for 59.9 percent of total production-related waste of PBT chemicals in 2000 and 47.1 percent of quantities released on- and off-site. Mercury and mercury compounds accounted for 33.1 percent of all quantities of PBT chemicals released on- and off-site (4.0 million pounds out of 12.2 million pounds), and this represented 82.9 percent of all production-related waste of mercury and mercury compounds managed in 2000.

While on-site energy recovery accounted for 10.8 percent of all production-related waste for PBT chemicals, most of this was the 7.6 million pounds of polycyclic aromatic compounds that were in waste used for energy recovery on-site. This was 17.6 percent of all production-related waste managed for polycyclic aromatic compounds and 98.1 percent of all on-site energy recovery of PBT chem-

Table 3-3: TRI Transfers Off-site for Further Waste Management/Disposal, PBT Chemicals, 2000

CAS Number	Chemical	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs: Metals and Metal Compounds Pounds	Transfers to POTWs: Non-metal TRI Chemicals Pounds	Other Off-site Transfers** Pounds	Other Off-site Transfers to Disposal*** Pounds	Total Transfers for Further Waste Management/ Disposal Pounds
	-- Dioxin and dioxin-like compounds*	**0.02**	**4.80**	**129.00**	**0.00**	**0.24**	**0.04**	**118.94**	**253.04**
	*-- Dioxin and dioxin-like compounds (in grams)**	*7 43*	*2,178 71*	*58,504 45*	*0 00*	*108 80*	*17 06*	*53,941 158*	*114,757 612*
	Mercury and Mercury Compounds	**185,172.66**	**1.00**	**62.90**	**322 65**	**0 00**	**0.00**	**898,151.38**	**1,083,710.59**
7439-97-6	Mercury	93,376 58	0 00	58 00	121.90	0 00	0 00	27,784 56	121,341 04
	-- Mercury compounds	91,796 09	1 00	4 90	200 75	0 00	0 00	870,366 82	962,369 55
	Polycyclic Aromatic Compounds	**640,243.04**	**213,108.42**	**245,128.83**	**0.00**	**5,113.93**	**144.50**	**3,316,796.67**	**4,420,535 39**
191-24-2	Benzo(g,h,i)perylene	9,812 57	5,780 04	2,661 48	0.00	615 74	19.50	116,945 31	135,834 63
	-- Polycyclic aromatic compounds	*630,430 47*	*207,328 38*	*242,467 35*	*0 00*	*4,498 19*	*125 00*	*3,199,851 36*	*4,284,700 75*
1336-36-3	**Polychlorinated biphenyls (PCBs)**	**901.22**	**10,481.15**	**282,299.43**	**0.00**	**224.71**	**0.00**	**50,351.99**	**344,258.50**
	Pesticides	**0.00**	**1,003.00**	**126,726.55**	**0.00**	**13.00**	**0.00**	**13,734.60**	**141,477.15**
309-00-2	Aldrin	0 00	0 00	283 30	0 00	0 00	0 00	2 58	285.88
57-74-9	Chlordane	0 00	0 00	4,905 41	0 00	0 00	0 00	828 59	5,734 00
76-44-8	Heptachlor	0.00	0 00	3,773.30	0.00	0 00	0 00	221 87	3,995.17
465-73-6	Isodrin	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
72-43-5	Methoxychlor	0 00	775 00	430 00	0 00	0.00	0.00	31.75	1,236 75
40487-42-1	Pendimethalin	0 00	0 00	19,602 00	0 00	3 00	0 00	9,555 00	29,160 00
8001-35-2	Toxaphene	0 00	0 00	468 54	0.00	0 00	0 00	176.14	644 68
1582-09-8	Trifluralin	0 00	228 00	97,264 00	0 00	10 00	0 00	2,918 67	100,420 67
	Other PBTs	**13,822.00**	**58,415 00**	**45,082 88**	**0.00**	**11.66**	**0.00**	**562,249.24**	**679,580.78**
118-74-1	Hexachlorobenzene	13,421 00	56,586 00	36,956 28	0.00	10 66	0 00	23,908 04	130,881 98
29082-74-4	Octachlorostyrene	0 00	0 00	19 00	0 00	0 00	0 00	436 90	455 90
608-93-5	Pentachlorobenzene	401 00	0 00	1,390 81	0.00	0 00	0.00	355 00	2,146.81
79-94-7	Tetrabromobisphenol A	0 00	1,829 00	6,716 79	0 00	1 00	0 00	537,549 30	546,096 09
	Total	**840,138.94**	**283,013 38**	**699,429 59**	**322.65**	**5,363 54**	**144.54**	**4,841,402.82**	**6,669,815 45**

Note: Total Transfers Off-site for Further Management/Disposal are from Section 6 of Form R
* The chemical category dioxin and dioxin-like compounds is reported in grams Where the category dioxin and dioxin-like compounds is shown on a table with other TRI chemicals, it is presented in pounds The grams are converted to pounds by multiplying by 0 002205

** Other Off-site Transfers are transfers reported without a valid waste management code
*** Does not include transfers to POTWs of metals and metal compounds

icals. The 2.9 million pounds of on-site recycling of polycyclic aromatic compounds accounted for 81.5 percent of all on-site recycling of PBT chemicals.

Transfers Off-site for Further Waste Management/Disposal

As shown in Table 3-3, transfers off-site for further waste management and disposal totaled 6.7 million pounds for PBT chemicals for 2000. Polycyclic aromatic compounds accounted for 4.4 million pounds of the total (66.3 percent).

Almost 72.6 percent of all transfers for further waste management and disposal of PBT chemicals was other transfers to disposal (4.8 million pounds out of 6.7 million pounds). Another 12.6 percent was sent off-site for recycling, and 10.5 percent was transferred to treatment.

Other off-site transfers to disposal were the major type of transfer for all PBT chemicals primarily because of the 3.3 million pounds of other transfers to disposal of polycyclic aromatic compounds. Other off-site transfers to disposal of polycyclic aromatic compounds were 75.0 percent of all transfers of polycyclic aromatic compounds in 2000. Transfers to recycling of polycyclic aromatic compounds were 640,243 pounds or 14.5 percent of total transfers for polycyclic aromatic compounds. Similarly, mercury and mercury compounds had 82.9 percent of their transfers as other transfers to disposal and 17.1 percent as transfers to recycling.

Other types of PBT chemicals showed a somewhat different distribution of types of transfers. For polychlorinated biphenyls and pesticides the majority of their transfers were to treatment, 82.0 percent for

Table 3-4: Current Year and Projected Quantities of TRI Chemicals in Waste, PBT Chemicals, 2000-2002

PBT Chemical Group	Current Year 2000 Pounds	Projected 2001 Pounds	Projected 2002 Pounds
Dioxin and dioxin-like compounds*	868 69	916 25	876 56
*Dioxin and dioxin-like compounds (in grams)**	*393,963 081*	*415,534 761*	*397,533 459*
Mercury and Mercury Compounds	4,875,863 82	4,512,608 30	4,460,766 53
Polycyclic Aromatic Compounds	42,939,829 07	38,805,211 25	37,795,370 86
Polychlorinated biphenyls (PCBs)	13,689,049.42	13,599,460 14	13,591,299 85
Pesticides	2,554,027 10	2,303,452 89	2,198,704 45
Other PBTs	7,590,289 80	7,525,656 06	7,479,254 95
Total	**71,649,927.90**	**66,747,304 89**	**65,526,273.20**
PBT Chemical Group	**Projected Change 2000-2001** Percent	**Projected Change 2001-2002** Percent	**Projected Change 2000-2002** Percent
Dioxin and dioxin-like compounds*	5 5	-4 3	0 9
*Dioxin and dioxin-like compounds (in grams)**	*5 5*	*-4 3*	*0 9*
Mercury and Mercury Compounds	-7 5	-1 1	-8 5
Polycyclic Aromatic Compounds	-9 6	-2 6	-12 0
Polychlorinated biphenyls (PCBs)	-0 7	-0 1	-0 7
Pesticides	-9 8	-4 5	-13 9
Other PBTs	-0 9	-0 6	-1 5
Total	**-6.8**	**-1 8**	**-8.5**

Note: Current year and projected amounts are from Section 8 of Form R for 2000

* The chemical category dioxin and dioxin-like compounds is reported in grams Where the category dioxin and dioxin-like compounds is shown on a table with other TRI chemicals, it is presented in pounds The grams are converted to pounds by multiplying by 0 002205

polychlorinated biphenyls and 89.6 percent for pesticides.

Projected Quantities of TRI Chemicals Managed in Waste, 2000-2002

As described in **Waste Management** in Chapter 1, on each Form R that it submits, a facility reports actual waste management quantities for the current and prior years and projected quantities for the next two years. Most of the groups of PBT chemicals projected reductions in production-related waste for both 2001 and 2002 from their totals in 2000 (as shown in Table 3-4). Expected reductions in the group of pesticides were the largest, with a projected reduction of 13.9 percent by 2002. Total production-related waste of polycyclic aromatic compounds was projected to decline by 12.0 percent by 2002. Mercury and mercury compounds were projected to decline by 8.5 percent by 2002. The group of other PBT chemicals and polychlorinated biphenyls were projected to decrease from 2000 to 2002 by the smallest percentages, by 1.5 percent and 0.7 percent, respectively.

On the other hand, production-related waste of dioxin and dioxin-like compounds showed a projected increase of 5.5 percent from 2000 to 2001 with a decrease of 4.3 percent from 2001 to 2002, for an overall slight increase of 0.9 percent from 2000 to 2002.

Dioxin and Dioxin-like Compounds

Introduction

"Dioxins" refers to a group of chemical compounds that share similar chemical and biological properties. These toxic compounds are members of closely related families: the chlorinated dibenzo-p-dioxins (CDDs) and chlorinated dibenzofurans (CDFs). There are 75 congeners, or related individual compounds, of CDDs and 135 congeners of CDFs (EPA EA, 1999). Of these 210 congeners, seven CDD congeners and ten CDF congeners are thought to exhibit some degree of toxicity. These 17 toxic congeners all have four chlorine atoms attached to the main dioxin or furan molecule in the 2, 3, 7, and 8 positions. Sometimes the term dioxin is used to refer only to the most well-studied and one of the most toxic dioxin compounds, 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8,-TCDD). This use of the term dioxin is common in the dioxin literature though chemically imprecise. 2,3,7,8,-TCDD and the 16 other toxic CDD and CDF congeners are collectively referred to as dioxin-like compounds.

Although similar in other ways, all dioxin-like compounds do not have the same level of toxicity. As a result, a toxicity equivalency procedure was developed to quantify the toxicity of these compounds relative to each other for risk assessment purposes. It should be noted that these factors do not relate the toxicity of these chemicals to other chemicals (e.g., benzene). 2,3,7,8-TCDD is given the base toxicity equivalence factor (TEF) of 1.0. Each of the other 16 2,3,7,8-CDD/CDF congeners is then assigned its own toxicity equivalence factor based on estimates of its toxicity relative to that of "dioxin". The TEFs of the other dioxin-like compounds range from 1 to 0.0001. These TEF values have been adopted by international convention and are

Box 3-2: Dioxin and Dioxin-like Compounds Category and Corresponding TEF Values

CAS Number	Chemical Name	TEF
	CDDs	
1746-01-6	2,3,7,8-tetrachlorodibenzo-p-dioxin	1
40321-76-4	1,2,3,7,8-pentachlorodibenzo-p-dioxin	1
39227-28-6	1,2,3,4,7,8-hexachlorodibenzo-p-dioxin	0.1
57653-85-7	1,2,3,6,7,8-hexachlorodibenzo-p-dioxin	0.1
19408-74-3	1,2,3,7,8,9-hexachlorodibenzo-p-dioxin	0.1
35822-46-9	1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin	0.01
3268-87-9	1,2,3,4,6,7,8,9-octachlorodibenzo-p-dioxin	0.0001
	CDFs	
51207-31-9	2,3,7,8-tetrachlorodibenzofuran	0.1
57117-41-6	1,2,3,7,8-pentachlorodibenzofuran	0.05
57117-31-4	2,3,4,7,8-pentachlorodibenzofuran	0.5
70648-26-9	1,2,3,4,7,8-hexachlorodibenzofuran	0.1
57117-44-9	1,2,3,6,7,8-hexachlorodibenzofuran	0.1
72918-21-9	1,2,3,7,8,9-hexachlorodibenzofuran	0.1
60851-34-5	2,3,4,6,7,8-hexachlorodibenzofuran	0.1
67562-39-4	1,2,3,4,6,7,8-heptachlorodibenzofuran	0.01
55673-89-7	1,2,3,4,7,8,9-heptachlorodibenzofuran	0.01
39001-02-0	1,2,3,4,6,7,8,9-octachlorodibenzofuran	0.0001

listed in Box 3-2. Revisions of TEFs may periodically occur as new scientific data become available. Dioxin-like compounds are often found in complex mixtures. The relative toxicity of such a mixture is known as its toxic equivalency (TEQ). This is calculated by first multiplying the concentrations of the individual congeners by their respective TEFs then summing together the products to find the overall TEQ of the mixture.

Section 1.4 in Part II of the TRI Reporting Form R allows for the reporting of the distribution of each member of the dioxin and dioxin-like compounds category. Section 1.4 is reproduced below:

1.4 Distribution of Each Member of the Dioxin and Dioxin-like Compounds Category.

(If there are any numbers in boxes 1-17, then every field must be filled in with either 0 or some number between 0 01 and 100. Distribution should be reported in percentages and the total should equal 100%. If you do not have speciation data available, check NA.)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
NA																	

Each of the dioxin-like compounds in the category is assigned a number between 1 and 17, and the percentage of each compound is recorded in the space provided for its number. This distribution represents either the total quantity released to all media or the facility's best media-specific distribution. This distribution must be reported if the information is available from the data used to calculate thresholds, releases, and other waste management quantities.

Sources and Uses

EPA's draft *Dioxin Reassessment* prepared by EPA's Office of Research and Development (ORD) presents a comprehensive discussion of what is known about dioxin sources. It also provides a quantitative estimate of dioxin releases to the circulating environment for the years 1987 and 1995. The draft reassessment includes a detailed description of the analytical process and rationale that support the estimates including the development of dioxin emission factors. The inventory portion of the draft reassessment has completed independent peer review. Information about acquiring the draft inventory and supporting data can be obtained at http://www.epa.gov/ncea/dioxin.htm.

CDDs and CDFs are not commercially produced except in small quantities for chemical analyses and toxicological research. The only two reported commercial producers of dioxins in the United States are Eagle Picher Industries, Inc. in Lenexa, Kansas, and Cambridge Isotope Laboratories in Andover, Massachusetts. CDD/CDFs are not imported or exported from the United States unless as trace contaminants in a product (EPA EA, 1999).

CDDs and CDFs are formed as unwanted byproducts when chlorinated materials are involved in combustion or other high-temperature processes, such as waste incineration, energy generation, metallurgical processes, chemical manufacturing and other industrial processes. The following types of waste incineration are potential sources of CDD/CDF releases: municipal waste incineration, medical waste incineration, hazardous waste incineration, hazardous waste burned in boilers and industrial furnaces, sewage sludge incineration, crematoria, tire combustion, pulp and paper mill sludge incineration, and biogas combustion.

Energy generation sources of CDD/CDF releases include the combustion of coal, oil, and wood in residential, industrial, and electric utility establishments. Industrial combustion of these fuels occurs in all of the manufacturing sectors. Other high-temperature sources include Portland cement production, pulp mills using the kraft process, asphalt mixing plants, catalyst regeneration at petroleum refineries, carbon reactivation furnaces, cigarette smoking, and the pyrolysis of brominated flame retardants. In addition, minimally controlled or uncontrolled combustion sources may emit CDD/CDFs, including landfill gas in flares, landfill fires, accidental fires in buildings and vehicles, agricultural burning, forest and brush fires, backyard trash burning, and the accidental combustion of PCBs (EPA EA, 1999).

Metallurgical processes that may release CDD/CDFs include ferrous sources such as iron ore sintering, coke production, and the production of steel in electric arc furnaces from scrap feed. Secondary aluminum, copper, and lead smelters may also be sources of CDD/CDFs. The scrap metal feed for secondary nonferrous metal smelting often contains impurities such as plastics, paints, and solvents, and the secondary smelting of aluminum and copper includes the use of chlorine salts. The combustion of such impurities and/or chlorine salts may result in CDD/CDF formation.

CDDs and CDFs can also be formed as unintended byproducts of manufacturing processes. For example, they are generated in pulp and paper mills during chlorine bleaching. CDD/CDFs have been detected in the effluent, sludge, and pulp of pulp and paper mills (EPA EA, 1999). CDD/CDFs may also be unintentionally formed in the manufacture of chlorinated compounds such as chloranil, ethylene dichloride manufactured by oxychlorination, 2,4-D herbicides and pentachlorophenol (TRI Dioxin Guidance Document, EPA 2000). Potential sources of CDD/CDFs from other industrial processes include non-incinerated municipal sewage sludge, industrial effluents processed by publicly owned treatment works (POTWs), and chlorine bleaching (EPA EA, 1999).

CDDs and CDFs accumulate in soils, sediments, and organic matter, and therefore persist in waste disposal sites. These contaminated areas serve as reservoir sources for CDD/CDFs. Another reservoir source is wood preserved with pentachlorophenol. These reservoirs retain CDD/CDFs until potentially redistributing them at a future time. Possible methods of redistribution include settling of dust, air suspension, erosion or dredging of contaminated sediment, decomposition of contaminated material, or combustion of contaminated material.

Chemical Characteristics

Persistence and Bioaccumulation

CDDs and CDFs have persistence half-life values in soil that range from 1.5 years to more than 20 with all but one chemical having a soil half-life of more than 20 years. The persistence half-life values in air range anywhere from 1.2 hours to 29.4 hours. (EPA, PBT Chemicals Final Rule, October, 1999).

CDDs and CDFs have bioconcentration factor values that range from 1,259 to 42,500. Six chemicals have BCF values over 5,000 and 6 have values between 3,500 and 5,000. (EPA, PBT Chemicals Final Rule, October, 1999).

Environmental Fate and Transport

CDDs and CDFs enter the environment through releases to the atmosphere, soil, or water.

If CDD/CDFs are released to the atmosphere, they tend to bind to particulate matter. CDDs and CDFs emitted from point sources may be carried for long distances on fly ash and other particulate matter. Due to this potential for long-range transport, CDD/CDFs are found throughout the globe and are not restricted to areas where they are initially released. Suspended particles fall to the earth's surface in raindrops, in dust, or simply due to gravity. This process is called atmospheric deposition. CDDs and CDFs may also be removed from the atmosphere when they are broken down directly by sunlight or react to photochemical reactants produced in the atmosphere. This breakdown may occur to CDD/CDFs not bound to particles in the gaseous phase or at the soil- or water-air interface (EPA, NCEA, July 2000).

If CDD/CDFs are released to the soil, they will bind to particulate and organic matter because of their low water solubility. Once bound to particulate matter, CDD/CDFs will not significantly leach or evaporate. The available evidence indicates that CDD/CDFs are biologically and chemically resistant compounds exhibiting extreme stability under most environmental conditions, with environmental persistence measured in decades. Although some evaporation of CDD/CDFs on soil does occur, the predominant fate of CDD/CDFs bound to soil is to remain in place near the surface of undisturbed soil or to move to water bodies with erosion of soil.

CDDs and CDFs deposited on the soil and on vegetation may be taken up by terrestrial organisms. CDDs and CDFs bioaccumulate in the food chain.

If CDD/CDFs are released to water, they tend to bind to bottom sediments or to particulate matter in the water column due to their low water solubility. Once in the sediments, CDD/CDFs can be further transported or ingested by fish and other aquatic organisms. CDDs and CDFs bioaccumulate in aquatic organisms. The ultimate environmental sink of CDDs/CDFs is believed to be aquatic sediments.

Health and Environmental Effects

Data and information on human health effects of CDD/CDFs come primarily from case reports and epidemiological studies. The majority of adverse effects from exposure to CDD/CDFs have been reported among occupationally exposed populations (e.g., producers of such chemicals), and among residents or communities contaminated with CDD/CDFs. Effects associated with exposure to these chemicals include cancer, thyroid effects, effects on serum lipids, diabetes, and cardiovascular, respiratory, immunologic, neurologic, and reproductive effects. Toxicity studies conducted with laboratory animals, involving oral exposure to CDD/CDFs, have shown short and long-term effects including death, and cardiovascular, gastrointestinal, hematological, hepatic, renal, endocrine, dermal, body weight, immunologic, reproductive, and developmental effects. The most consistent effect is weight loss or decreased weight gain in growing rodents (ATSDR, December 1998).

Exposure to CDD/CDFs may also produce a variety of developmental, reproductive, and nervous system effects including skin rashes, skin discoloration, changes in cell growth, birth defects, behavior changes in offspring, autism, liver disease, endometriosis, reduced immunity, and chronic fatigue syndrome.

Most of the population is exposed to low levels of CDD/CDFs. EPA believes that most exposure to CDD/CDFs occurs via food ingestion. The most noted health effect in humans exposed to large amounts of CDD/CDFs is chloracne (EPA, NCEA, July 2000). Chloracne is a severe skin disease with acne-like lesions that occur mainly on the face and upper body.

Cancer is also associated with exposure to CDD/CDFs. Several occupational studies indicate an increased risk of cancer is associated with long term exposure to high levels of CDD/CDFs. Laboratory studies have also shown an increased risk of cancer from long term exposure to CDD/CDFs. In fact, dioxin is classified by the U.S. Department of Health and Human Services as a known human carcinogen.

Efforts to Reduce Pollution from the Chemical

Over the last 20 years, EPA has taken numerous measures to reduce and control CDD/CDFs in all environmental media in the U.S. The majority of the major industrial sources of CDD/CDFs are currently subject to controls and/or regulations. As a result, industrial CDD/CDFs emissions have been reduced. For example, municipal waste combustors which do not report to TRI are estimated to have emitted nearly 18 pounds of dioxin toxic equivalents in 1987. 2002 municipal combustor emissions are expected to be less than 1/2 ounce per year (EPA, NCEA, July 2000). EPA estimates that medical waste incinerators (which do not report to TRI) emitted about 5 pounds of dioxin toxic equivalents in 1987 but under EPA regulations they will be limited to about 1/4 ounce annual emissions in 2002 (EPA, NCEA, July 2000).

In addition, EPA has taken numerous non-regulatory actions to reduce pollution from CDD/CDFs and protect human and environmental health. For example, in 1994, EPA created the Dioxin Exposure Initiative, (DEI), a research program to further evaluate the exposure of Americans to this class of compounds. In addition, EPA works closely with the Food and Drug Administration (FDA) and the US Department of Agriculture (USDA) to ensure that the risks posed by CDD/CDFs in food packaging are minimized.

2000 TRI DATA FOR DIOXIN AND DIOXIN-LIKE COMPOUNDS

On-site and Off-site Releases

As shown in Table 3-5, there were 1,274 TRI forms submitted for dioxin and dioxin-like compounds for 2000. On- and off-site releases for dioxin and dioxin-like compounds totaled 99,814 grams. Over half of total releases were released off-site as transfers to disposal, which totaled 53,898 grams or 54.0 percent (see Figure 3-1). The second largest release type was other on-site land releases (that is, other than RCRA subtitle C landfills), which totaled 33,313 grams. (Types of on-site land releases are described in Box 1-4 in Chapter 1.)

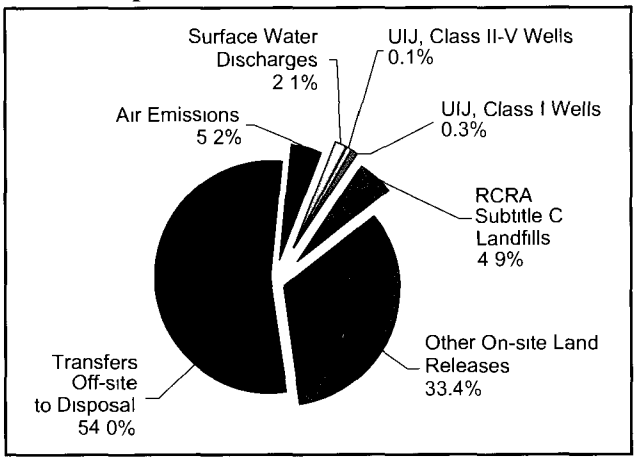
Much smaller amounts of other types of releases were reported. Air emissions in 2000 totaled 5,218 grams or 5.2 percent of total releases. On-site land releases to RCRA subtitle C landfills were 4,904 grams, and surface water discharges were 2,076 grams. Underground injection of dioxin and dioxin-like compounds was less than 500 grams.

Waste Management Data

Quantities of TRI Chemicals in Waste

Production-related waste of dioxin and dioxin-like compounds totaled 393,963 grams in 2000, as shown in Table 3-6. Almost two-thirds of this (249,513 grams or 63.3 percent) was treated on-site (see Figure 3-2). The quantity released on- and off-site totaled 105,710 grams or over one-quarter of total production-related waste. A total of 32,272 grams, or 8.2 percent, of dioxin and dioxin-like compounds was treated off-site. Almost 4,449 grams were in waste in which the primary chemical was recycled on-site and almost 1,995 grams were in waste sent for energy recovery off-site.

Figure 3-1: Distribution of TRI On-site and Off-site Releases, 2000: Dioxin and Dioxin-like Compounds



Note: On-site Releases are from Section 5 of Form R ***Off-site Releases*** *are* from Section 6 (transfers off-site to disposal) of Form R ***Off-site Releases*** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

UIJ=underground injection

Transfers Off-site for Further Waste Management/Disposal

Transfers off-site for further waste management and disposal of dioxin and dioxin-like compounds totaled 114,758 grams in 2000 (see Table 3-7). Transfers to treatment accounted for half of this amount, 58,504 grams or 51.0 percent (see Figure 3-3). Other transfers off-site to disposal accounted for 47.0 percent; the amount was 53,941 grams.

Other types of transfers off-site for further waste management and disposal in 2000 accounted for

Table 3-5: TRI On-site and Off-site Releases, 2000: Dioxin and Dioxin-like Compounds

		On-site Releases							Off-site Releases	
				Underground Injection		On-site Land Releases				
CAS Number Chemical	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
	Number	Grams	Grams	Grams	Grams	Grams	Grams	Grams	Grams	Grams
– Dioxin and dioxin-like compounds	1,274	5,217 775	2,075 634	284 112	121.080	4,903 737	33,313 286	45,915.624	53,898 465	99,814 089

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R ***Off-site Releases*** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

about 2 percent of the total, with transfers to energy recovery totaling 2,179 grams. All other types of transfers of dioxin and dioxin-like compounds totaled less than 120 grams in 2000.

TRI Data by State

Facilities in Texas, with 84 forms, submitted the largest number of forms in 2000 for dioxin and dioxin-like compounds. Pennsylvania and Louisiana ranked second and third, with 64 and 59 forms, respectively.

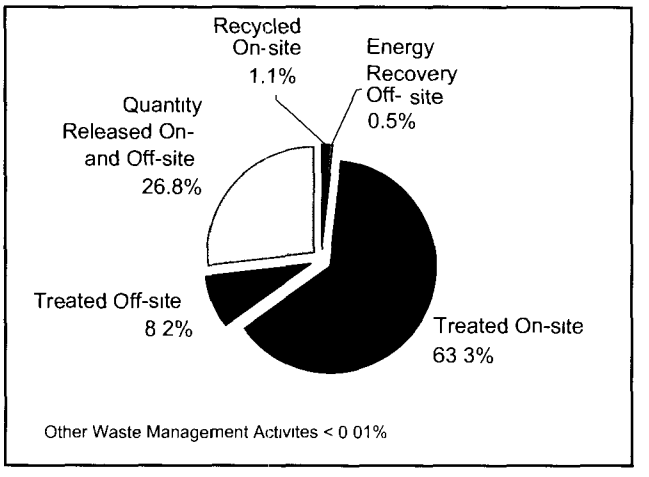
On- and Off-site Releases

In 2000, facilities in Delaware reported the largest total releases on- and off-site of dioxin and dioxin-like compounds (see Table 3-8). They reported a total of 38,682 grams, or 38.8 percent of the total for 2000. Almost all of Delaware's releases of dioxin and dioxin-like compounds were as off-site releases (transfers to disposal). Delaware reported 71.7 percent of all reported off-site releases of dioxin and dioxin-like compounds in 2000.

As shown in Map 3-1, Mississippi and Texas along with Delaware reported the largest amounts of total releases of dioxin and dioxin-like compounds in 2000, with Mississippi reporting 19,979 grams and Texas reporting 17,373 pounds. Fourth ranked was Tennessee with 6,427 grams.

Mississippi, with the second largest total releases, reported the largest amounts of other on-site land releases (that is, other than RCRA subtitle C landfills), with 19,783 grams or 59.4 percent of all such land releases of dioxin and dioxin-like compounds in 2000. Texas, with the third largest total releases, had the largest releases to on-site RCRA subtitle C landfills, amounting to 4,166 grams and second largest off-site releases (11,954 grams).

Figure 3-2: TRI Waste Management, 2000: Dioxin and Dioxin-like Compounds



Note: Data are from Section 8 of Form R

The state with the largest air emissions of dioxin and dioxin-like compounds in 2000 was Georgia with 995 grams. Louisiana reported the largest surface water discharges, with 935 grams.

Waste Management Data

The state with the largest quantity of total production-related waste of dioxin and dioxin-like compounds in 2000 was Texas (see Table 3-8). Texas's 148,199 grams of total production-related waste was over two and a half times that of any other state. Louisiana ranked second with 54,981 grams, and Michigan ranked third with 48,997 grams.

Texas accounted for almost half of the dioxin and dioxin-like compounds reported as treated on-site, 121,547 grams or 48.7 percent of the total. Texas facilities also reported the largest amount treated off-site, 9,255 grams or 28.7 percent of the total.

Table 3-6: Quantities of TRI Chemicals in Waste Managed, 2000: Dioxin and Dioxin-like Compounds

CAS Number	Chemical	Recycled On-site Grams	Recycled Off-site Grams	Energy Recovery On-site Grams	Energy Recovery Off-site Grams	Treated On-site Grams	Treated Off-site Grams	Quantity Released On- and Off-site Grams	Total Production-related Waste Managed Grams	Non-production-related Waste Managed Grams
–	Dioxin and dioxin-like compounds	4,448 559	5.393	19.698	1,994 612	249,513.356	32,271.529	105,709.934	393,963 081	26,821.006

Note: Data are from Section 8 of Form R

The state with the largest quantity released on- and off-site was Delaware, with 38,682 grams or 36.6 percent of the total. Mississippi ranked second for releases on- and off-site with 19,985 grams and Texas was third with 17,397 grams.

TRI Data by Industry (2-digit SIC Code)

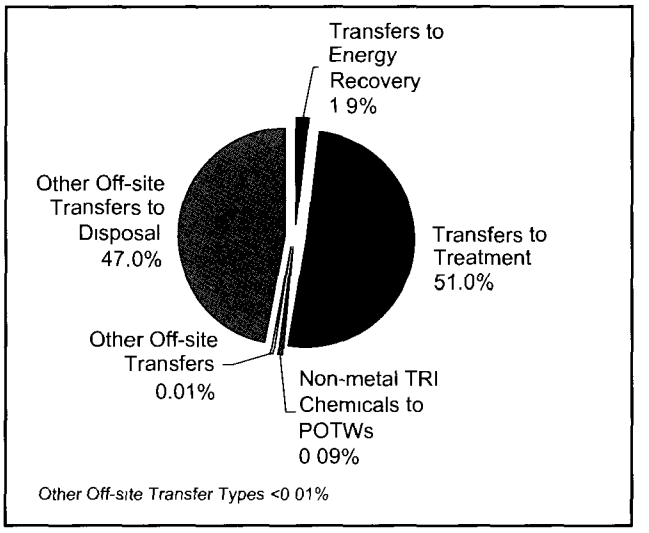
On- and Off-site Releases

The original manufacturing sector industries reported 96,900 grams or 97.1 percent of the total releases on- and off-site of dioxin and dioxin-like compounds in 2000 (see Table 3-9).

Chemical manufacturers accounted for the largest releases, 89,100 grams or 89.3 percent of all industry sectors reporting releases of dioxin and dioxin-like compounds. The chemical industry also reported the largest amounts of all types of releases. The largest type of release reported by the chemical industry was off-site releases (transfers to disposal), with 51,400 grams of off-site releases or 95.3 percent of total off-site releases for dioxin and dioxin-like compounds. The second largest type of release for the chemical industry was other on-site land releases (that is, other than RCRA subtitle C landfills) of 30,300 grams or 91.0 percent of all such releases of dioxin and dioxin-like compounds.

The primary metals industry reported the second largest amount of releases of dioxin and dioxin-like compounds in 2000. Their 4,300 grams of total releases accounted for 4.3 percent of total releases for all industry sectors. The largest types of releases for the primary metals industry were 2,000 grams of other on-site land releases (other than RCRA subtitle C landfills) and 1,300 grams of off-site releases (transfers to disposal).

Figure 3-3: Distribution of TRI Transfers Off-site for Further Waste Management/Disposal, 2000: Dioxin and Dioxin-like Compounds



Note: Total Transfers Off-site for Further Management/Disposal are from Section 6 of Form R

Electric utilities, a new industry sector, reported the third largest amount of releases of dioxin and dioxin-like compounds in 2000, with 2,000 grams. Most of their releases were air emissions. Air emissions of dioxin and dioxin-like compounds from electric utilities were 1,150 grams, accounting for 22.1 percent of all air emissions from all industry sectors and was the second largest reported amount of air emissions of any industry sector (behind the chemical industry).

Table 3-7: TRI Transfers Off-site for Further Waste Management/Disposal, 2000: Dioxin and Dioxin-like Compounds

CAS Number Chemical	Transfers to Recycling Grams	Transfers to Energy Recovery Grams	Transfers to Treatment Grams	Transfers to POTWs: Metals and Metal Compounds Grams	Transfers to POTWs: Non-metal TRI Chemicals Grams	Other Off-site Transfers* Grams	Other Off-site Transfers to Disposal** Grams	Total Transfers for Further Waste Management/ Disposal Grams
-- Dioxin and dioxin-like compounds	7 432	2,178 711	58,504 455	0.000	108 800	17.057	53,941.158	114,757.612

Note: Total Transfers Off-site for Further Management/Disposal are from Section 6 of Form R

* Other Off-site Transfers are transfers reported without a valid waste management code
** Does not include transfers to POTWs of metals and metal compounds

Table 3-8: Summary of TRI Information by State, 2000: Dioxin and Dioxin-like Compounds

		On-site Releases							Off-site Releases	
				Underground Injection		On-site Land Releases				
State	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
	Number	Grams	Grams	Grams	Grams	Grams	Grams	Grams	Grams	Grams
Alabama	51	902.253	130.657	0 000	0.000	9.000	22 344	1,064 254	89 775	1,154.028
Alaska	3	0 542	0 000	0 000	0 000	0 000	0 000	0 542	0 000	0 542
Arizona	17	14 240	0.000	0.000	0.000	0 000	0.016	14.256	0.000	14.256
Arkansas	23	29 064	12 089	0 000	0 000	0 000	43 756	84 909	27 221	112 130
California	35	34.578	4 075	0 000	0.000	9.000	0 000	47 653	26.908	74.561
Colorado	15	8 256	0 060	0 000	0.000	0 000	0 000	8 316	0 001	8 317
Connecticut	12	7.553	3.000	0.000	0 000	0.000	0.000	10.553	4.309	14 862
Delaware	8	4 958	13 990	0 000	0 000	0 000	1 140	20 088	38,662 358	38,682 446
District of Columbia	1	0.120	0.000	0.000	0.000	0.000	0.000	0.120	0 000	0.120
Florida	46	70 610	4 422	0 000	0 000	0 000	27 983	103.014	0 000	103 014
Georgia	37	994.577	19 613	0.000	0.000	0.000	271 842	1,286.032	139.949	1,425.981
Hawaii	8	4 933	0 000	0 000	0 000	0 000	0 000	4 933	0 960	5 893
Idaho	7	1 884	5.136	0 000	0.000	0.000	3.732	10.752	74.358	85.111
Illinois	38	50 001	0 030	0 000	0 000	0 000	0 000	50 031	36 836	86 867
Indiana	45	190.739	0.026	0.000	0.000	0.000	19.600	210.366	245 021	455.387
Iowa	29	50 963	0 000	0 000	0 000	0 000	0 040	51.003	0 010	51 013
Kansas	20	46.053	0.732	283 787	0.000	0.000	26.500	357.072	1.300	358 372
Kentucky	34	35 198	5 094	0 000	0 480	0 009	250 710	291 490	0 013	291 504
Louisiana	59	103 501	934.682	0.225	0.000	7.700	1,315.351	2,361.458	774.737	3,136 196
Maine	16	8.646	6 219	0 000	0.000	0 000	5 581	20 446	3 440	23 886
Maryland	14	34.157	16.260	0.000	0.000	0.000	2,720 980	2,771.397	0.286	2,771.683
Massachusetts	7	11 662	0 070	0 000	0 000	0 000	0 000	11.732	0 190	11 922
Michigan	30	25.223	5.830	0.000	0 000	320.570	13.407	365.030	145.310	510 340
Minnesota	20	8 330	0 000	0 000	0 000	0 000	723 612	731 942	15 915	747 857
Mississippi	31	20.357	176.233	0 000	0 000	0 000	19,782.585	19,979 175	0.137	19,979.311
Missouri	35	27 238	2 908	0 000	0 000	1 250	0 017	31 413	5 376	36 790
Montana	6	16.108	0.162	0 000	0 000	0.000	0 005	16 274	0.003	16.277
Nebraska	10	432 199	0 000	0 000	0 000	0 000	1 070	433.269	0 000	433 269
Nevada	13	10 916	0.000	0 000	0 000	0.000	0.000	10.916	0.000	10 916
New Hampshire	6	1 379	0 670	0 000	0 000	0 000	1 296	3 345	0 000	3 345
New Jersey	18	8.043	0.544	0 000	0 000	1.760	0 000	10 347	31 280	41.626
New Mexico	6	7 989	0 000	0 000	0 000	0 000	0 000	7 989	0 000	7 989
New York	45	32.594	6.287	0.000	0.000	0 000	0.377	39.258	59.078	98 336
North Carolina	38	68 974	3 462	0 000	0 000	0 250	2 415	75 100	610 993	686.093
North Dakota	10	7.683	0 000	0 000	0.000	0 000	0 790	8.473	0.000	8.473
Ohio	57	53 400	2 765	0 100	0 000	0 000	242 098	298 363	250 490	548 853
Oklahoma	18	67 904	0 181	0.000	0 000	377.382	13.541	459.008	78.463	537.471
Oregon	21	8 747	24 584	0 000	0 000	10 000	1 256	44 587	2 647	47 235
Pennsylvania	64	173.226	4 511	0 000	0.000	0.000	12 472	190 208	157.527	347.735
Puerto Rico	8	16 497	0 002	0 000	0 000	0 000	0 000	16 499	0 658	17 157
Rhode Island	1	0.008	0.000	0 000	0 000	0.000	0 000	0.008	0.002	0.011
South Carolina	35	98 361	5 679	0 000	0 000	0 000	1 487	105 526	3 663	109 189
South Dakota	6	1 086	12.602	0.000	0.000	0 000	0.000	13.688	36 081	49.769
Tennessee	42	49 616	16 097	0 000	0 000	0 000	6,098 276	6,163 989	262 855	6,426 844
Texas	84	528 498	602.327	0.000	120.600	4,166 400	1 765	5,419.590	11,953 526	17,373 116
Utah	14	658 413	0 000	0 000	0 000	0 000	1,667 668	2,326 080	26 920	2,353 000
Vermont	1	1 103	0.000	0.000	0.000	0 000	0.000	1 103	0.000	1.103
Virgin Islands	3	1 011	0 069	0 000	0 000	0 000	0 000	1 080	0 000	1 080
Virginia	38	104.291	6.658	0.000	0.000	0.000	14.768	125.717	51 013	176.730
Washington	26	40 316	44 260	0 000	0 000	0 000	22 046	106 622	71 070	177 692
West Virginia	21	66.625	2 807	0.000	0 000	0.000	0 160	69 592	0.938	70.529
Wisconsin	33	61 976	0 843	0 000	0 000	0 417	2 602	65 837	46 849	112 686
Wyoming	9	15.179	0 000	0.000	0.000	0 000	0.000	15.179	0.000	15.179
Total	**1,274**	**5,217.775**	**2,075.634**	**284.112**	**121.080**	**4,903 737**	**33,313.286**	**45,915.624**	**53,898.465**	**99,814.089**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

Table 3-8: Summary of TRI Information by State, 2000: Dioxin and Dioxin-like Compounds (continued)

State	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site	Total Production-related Waste Managed	Non-production-related Waste Managed
	On-site Grams	Off-site Grams	On-site Grams	Off-site Grams	On-site Grams	Off-site Grams	Grams	Grams	Grams
Alabama	481.000	0.000	0.000	1,206.928	103.419	1,528.509	1,142.281	4,462.137	2,773.223
Alaska	0.000	0 000	0 000	0 000	0 097	0 000	0 542	0.639	0 000
Arizona	0.000	0.000	0.000	0.000	0.000	0.000	14 256	14.256	0.000
Arkansas	0.000	0.000	0 000	0 000	150 019	0 000	112 853	262 872	0.000
California	0.000	0.010	0.000	1.652	34.450	909.197	7,108.124	8,053.433	0 000
Colorado	0.000	0 000	0 000	0.000	0 001	0 000	8.321	8 321	0 000
Connecticut	0.000	0.000	0.000	0.000	19.000	0.003	10 732	29.736	0.000
Delaware	0 000	0 000	0 000	0 000	0 000	750 000	38,682 456	39,432 456	0 000
District of Columbia	0.000	0.000	0.000	0.000	0.000	0.000	0.120	0.120	0.000
Florida	0 000	0.176	0.000	0 000	0.000	0 002	100 205	100 383	0.000
Georgia	2,801.937	0.000	0.172	597.283	145.701	189 427	1,425.919	5,160.438	1.645
Hawaii	0 000	0 000	0 000	0 000	0 000	0 000	5.893	5.893	0 000
Idaho	0.000	0.000	6.483	0.000	0.000	0.000	85.111	91.594	0.000
Illinois	0.000	0 964	0 000	7 800	0.000	0 597	86 865	96 226	0 000
Indiana	0.000	0 000	0.000	0.000	869.804	0.005	456.336	1,326.146	0.000
Iowa	0 000	0 000	0 000	0 000	0 000	0 000	51 003	51.003	0.000
Kansas	0.000	0.000	0.000	0 000	11,052.000	44.198	346.341	11,442.539	0.000
Kentucky	0 000	0 000	0 000	0 000	38 494	1,500 029	290.573	1,829.096	1 000
Louisiana	830.190	0.210	0.000	0.000	46,872.479	4,974.413	2,303.788	54,981.081	0.000
Maine	0 000	0 527	0 571	0 000	0.000	0 000	27 233	28 331	0.000
Maryland	0.002	0.003	1.300	0 000	2,647.000	0.040	2,771.893	5,420.238	0.000
Massachusetts	0 000	0 008	0 000	0 000	0 099	0 000	11.962	12 069	0 000
Michigan	0.000	0.000	0.000	0.000	48,800.000	8.615	188.469	48,997.084	320.500
Minnesota	0 000	0 025	0 000	174 752	120 761	44 465	747 859	1,087.863	0 225
Mississippi	20.348	1.572	0.660	3.635	11 000	1,365.715	19,984.645	21,387.574	5.018
Missouri	0 000	0 000	0.000	0.607	0 000	1 997	36 803	39 408	1 468
Montana	0.000	0.000	0.000	0.000	0.000	0.000	16 277	16 277	0.000
Nebraska	0 000	0 000	0 000	0 000	0 000	0 004	433.201	433.205	0 000
Nevada	315.000	0.000	0.000	0.000	0.002	630.823	10.916	956.740	0.000
New Hampshire	0 000	0.000	0.000	0 000	0.000	0 000	3 350	3.350	0 000
New Jersey	0.000	1.500	0.000	0.000	0.000	18.730	46 031	66.261	0.000
New Mexico	0.000	0 000	0 000	0.000	0.000	0 000	7 989	7 989	0 000
New York	0.000	0.360	0.004	0.000	12,595.200	28.801	45 830	12,670.195	23,700.000
North Carolina	0.000	0 000	0 000	0 000	22 654	5,865 753	685 967	6,574.374	0.000
North Dakota	0.000	0 000	0 000	0.000	7.000	0 000	8.263	15.263	0.000
Ohio	0 000	0.000	0 000	0.000	845.606	0 000	547 885	1,393.490	0 000
Oklahoma	0.000	0.000	0.000	0.000	13.800	0.000	537.506	551.306	0.000
Oregon	0 000	0 000	0 000	0 000	8 036	3,160 873	49 065	3,217 973	17.897
Pennsylvania	0.000	0 010	9.700	0.000	172.310	0 000	346.928	528.949	0.000
Puerto Rico	0 000	0 000	0.000	0.000	0.000	0 000	16 499	16 499	0 000
Rhode Island	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.011	0.000
South Carolina	0 000	0 000	0 000	1 955	33 598	1,000 000	131 906	1,167 459	0.000
South Dakota	0.000	0.000	0.000	0.000	0.000	51.516	49.769	101.284	0.000
Tennessee	0 000	0.000	0.800	0 000	2,523 091	2 658	6,449 944	8,976 493	0 000
Texas	0.000	0.004	0.000	0.000	121,547.331	9,255.006	17,396.856	148,199.196	0.030
Utah	0 000	0 000	0 000	0 000	8 397	2.300	2,353 000	2,363 697	0 000
Vermont	0.000	0.000	0.000	0.000	0.000	0.000	1.103	1.103	0.000
Virgin Islands	0.000	0 000	0.000	0 000	0 000	0.000	1 080	1 080	0 000
Virginia	0.000	0.000	0 000	0.000	2.700	0.000	176.744	179.444	0.000
Washington	0 082	0.000	0 008	0 000	268 617	937 784	194 725	1,401 216	0 000
West Virginia	0.000	0.000	0.000	0.000	0.000	0.069	70.290	70.359	0.000
Wisconsin	0 000	0 024	0 000	0 000	600 691	0 000	113 040	713.755	0.000
Wyoming	0.000	0.000	0.000	0.000	0.000	0.000	15.179	15.179	0.000
Total	**4,448.559**	**5.393**	**19.698**	**1,994.612**	**249,513.356**	**32,271.529**	**105,709.934**	**393,963.081**	**26,821.006**

Note: Data are from Section 8 of Form R

Waste Management

The chemical manufacturing industry reported the largest amount of total production-related waste of dioxin and dioxin-like compounds in 2000 (see Table 3-9). With 342,700 grams of production-related waste, it accounted for 87.0 percent of all production-related waste. Two-thirds of the production-related waste reported by the chemical industry (231,200 grams or 67.4 percent) was treated on-site.

The lumber industry reported the second largest amount of production-related waste, with 18,400 grams or 4.7 percent of the total for dioxin and dioxin-like compounds in 2000. Over half of the production-related waste reported by the lumber industry (10,700 grams or 57.9 percent) was treated off-site. The hazardous waste/solvent recovery industry reported the third largest amount of production-related waste. Most of the 11,800 grams reported by the hazardous waste industry was treated on-site.

Projected Quantities of TRI Chemicals Managed in Waste, 2000-2002

TRI facilities expected to increase their production-related waste of dioxin and dioxin-like compounds between 2000 and 2001 by 5.5 percent, from 393,963 grams to 415,535 grams (see Table 3-10). The increase was projected to occur in waste reported as being sent off-site for recycling and energy recovery and the quantity released on- and off-site. From 2001 to 2002, a decrease of 4.3 percent was projected, resulting in a slight decrease from 2000 to 2002 of 0.9 percent. Decreases were expected to occur in waste treated on- and off-site and in amounts recycled and used for energy recovery on-site.

Table 3-9: Summary of TRI Information by Industry, 2000: Dioxin and Dioxin-like Compounds

			On-site Releases							Off-site Releases	
					Underground Injection		On-site Land Releases				
SIC Code	Industry	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
		Number	Grams	Grams	Grams	Grams	Grams	Grams	Grams	Grams	Grams
20	Food	24	19 138	0 000	0 000	0 000	0 000	0 107	19.244	0.000	19.244
21	Tobacco	2	0 450	0 000	0 000	0 000	0 000	0 000	0 450	0 000	0 450
22	Textiles	1	0.120	0 000	0.000	0.000	0.000	0 000	0 120	0 000	0.120
24	Lumber	103	25 006	357 643	0 000	0 000	0 000	11 267	393 915	711 775	1,105 690
25	Furniture	2	3 113	0 000	0 000	0 000	0 000	0 000	3 113	0.000	3.113
26	Paper	164	112 474	112 190	0 000	0 000	7 947	150 502	383 114	107 954	491 068
28	Chemicals	136	1,253 559	1,567 634	284.012	120 600	4,177.930	30,311 981	37,715.716	51,387 466	89,103 182
29	Petroleum	58	30 109	9 543	0 000	0 000	0 000	0 991	40 643	11 287	51 930
30	Plastics	2	0.794	0.000	0 000	0 000	0 000	0 145	0 939	0 000	0.939
32	Stone/Clay/Glass	113	457 043	0 732	0 000	0 480	0 000	48 290	506 546	0 000	506 546
33	Primary Metals	110	944 778	0 040	0 000	0 000	1 250	2,018 936	2,965 004	1,344.895	4,309 898
34	Fabricated Metals	1	0 821	0 000	0 000	0 000	0 000	0 000	0 821	0 000	0 821
35	Machinery	2	12 638	0 000	0 000	0 000	0 000	0 000	12.638	0 000	12.638
36	Electrical Equip	1	1 000	0 000	0 000	0 000	0 000	0 000	1 000	0 000	1 000
37	Transportation Equip	5	0 663	0 000	0.000	0.000	0 000	0 000	0 663	0 948	1.611
38	Measure/Photo	1	2 310	2 680	0 000	0 000	0 000	0 007	4 997	0 542	5 539
	Multiple codes 20-39	43	1,066.582	25.147	0 000	0 000	0 000	21 588	1,113 318	141.506	1,254 823
	No codes 20-39	11	4 987	0 000	0 000	0 000	0 000	0 000	4 987	0 000	4 987
	Subtotal for Original Industries	**779**	**3,935.584**	**2,075.610**	**284.012**	**121.080**	**4,187.127**	**32,563.814**	**43,167.227**	**53,706.372**	**96,873.599**
10	Metal Mining	10	3 328	0 021	0 000	0 000	0 000	13 440	16 789	0 000	16 789
12	Coal Mining	1	0 000	0.000	0.000	0 000	0 000	5 670	5.670	0.000	5.670
491/493	Electric Utilities	466	1,150 726	0 003	0 000	0 000	0 000	729 292	1,880 021	159 681	2,039 702
5171	Petroleum Terminals/Bulk Storage	2	102 800	0 000	0 000	0 000	0 000	0 000	102.800	0 000	102.800
4953/7389	Hazardous Waste/Solvent Recovery	16	25 337	0 000	0 100	0 000	716 610	1 070	743 117	32 413	775 530
	Subtotal for New Industries	**495**	**1,282.191**	**0.024**	**0.100**	**0.000**	**716.610**	**749.472**	**2,748.397**	**192.093**	**2,940.490**
	Total	**1,274**	**5,217 775**	**2,075 634**	**284 112**	**121.080**	**4,903.737**	**33,313.286**	**45,915.624**	**53,898.465**	**99,814.089**

Note: **On-site Releases** are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

Map 3-1: Total On-and Off-site Releases, 2000: Dioxin and Dioxin-like Compounds

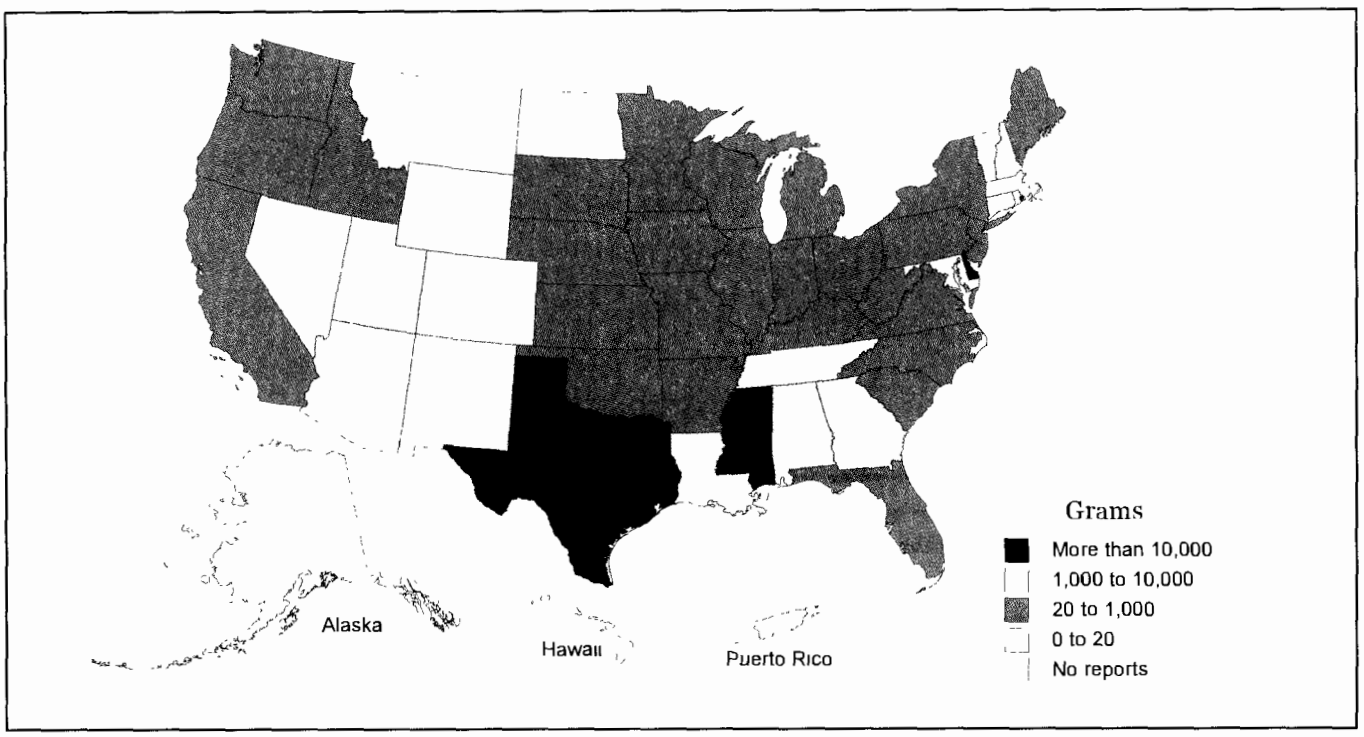


Table 3-9: Summary of TRI Information by Industry, 2000: Dioxin and Dioxin-like Compounds (continued)

		Recycled		Energy Recovery		Treated				
SIC Code	Industry	On-site Grams	Off-site Grams	On-site Grams	Off-site Grams	On-site Grams	Off-site Grams	Quantity Released On- and Off-site Grams	Total Production-related Waste Managed Grams	Non-production-related Waste Managed Grams
20	Food	0.000	0 000	0 000	0 000	0 000	0 000	19.245	19 245	0 000
21	Tobacco	0 000	0 000	0 000	0 000	0 000	0 000	0 450	0 450	0 000
22	Textiles	0.000	0 000	0 000	0 000	0.000	0 000	0 120	0.120	0 000
24	Lumber	4,448 367	0 033	0 000	1,983 204	203 434	10,660 335	1,116 827	18,412 201	2,799 476
25	Furniture	0 000	0 000	0 000	0 000	0.000	0 000	3.113	3 113	0 000
26	Paper	0 000	2 526	11 911	0 000	560 495	7 754	497 539	1,080 225	0 000
28	Chemicals	0 002	0 193	1 300	11 407	231,100 601	16,529 043	95,028.351	342,670.897	24,020.530
29	Petroleum	0 190	0 004	0 000	0 000	92 262	10 548	53 358	156 362	1 000
30	Plastics	0 000	0 000	0 000	0 000	0 000	0 000	0 944	0 944	0 000
32	Stone/Clay/Glass	0 000	0 000	0 004	0 000	0 000	0 000	490 469	490 473	0 000
33	Primary Metals	0.000	1 676	0 000	0 000	6,402 493	4.703	4,251.269	10,660.141	0.000
34	Fabricated Metals	0 000	0 000	0 000	0 000	0 000	0 000	0.820	0 820	0 000
35	Machinery	0 000	0.000	0 000	0 000	0 000	0 000	12.638	12.638	0.000
36	Electrical Equip	0 000	0 000	0 000	0 000	0 000	0 000	1 000	1 000	0 000
37	Transportation Equip.	0 000	0 000	0.000	0 000	0 000	0 000	1.610	1.610	0 000
38	Measure/Photo	0 000	0 000	0 000	0 000	34 000	0 001	5.600	39 601	0 000
	Multiple codes 20-39	0 000	0 000	6 483	0 000	46 790	0.297	1,274.584	1,328.154	0 000
	No codes 20-39	0 000	0 000	0 000	0 000	0 097	5,057 000	4 947	5,062 044	0 000
	Subtotal for Original Industries	**4,448.559**	**4.433**	**19.698**	**1,994.612**	**238,440.171**	**32,269.679**	**102,762.885**	**379,940.037**	**26,821.006**
10	Metal Mining	0 000	0 000	0 000	0 000	0 002	0 000	16 789	16 792	0 000
12	Coal Mining	0.000	0 000	0.000	0.000	0 000	0 000	5.670	5.670	0 000
491/493	Electric Utilities	0 000	0 960	0 000	0 000	0 099	0 000	2,048 023	2,049 082	0 000
5171	Petroleum Terminals/Bulk Storage	0 000	0 000	0 000	0 000	0 000	0.000	102 800	102 800	0 000
4953/7389	Hazardous Waste/Solvent Recovery	0 000	0 000	0 000	0 000	11,073 083	1 850	773 767	11,848 700	0 000
	Subtotal for New Industries	**0.000**	**0.960**	**0.000**	**0.000**	**11,073.184**	**1.850**	**2,947.049**	**14,023.044**	**0.000**
	Total	**4,448.559**	**5.393**	**19.698**	**1,994.612**	**249,513.356**	**32,271.529**	**105,709.934**	**393,963.081**	**26,821.006**

Note: Data are from Section 8 Form R

Table 3-10: Current year and Projected Quantities of TRI Chemicals in Waste, 2000: Dioxin and Dioxin-like Compounds

Waste Management Activity	Current Year 2000		Projected 2001		Projected 2002	
	Total Grams	Percent of Total	Total Grams	Percent of Total	Total Grams	Percent of Total
Recycled On-site	4,448.559	1.1	3,535.192	0.9	3,535 192	0.9
Recycled Off-site	5 393	0 0	8,840 097	2 1	8,840 091	2 2
Energy Recovery On-site	19 698	0 0	13.152	0.0	12 044	0.0
Energy Recovery Off-site	1,994 612	0 5	2,757 980	0 7	2,757 980	0 7
Treated On-site	249,513.356	63.3	241,249.696	58 1	217,930 664	54 8
Treated Off-site	32,271 529	8 2	18,172 608	4 4	18,297 799	4 6
Quantity Released On- and Off-site	105,709.934	26 8	140,966.036	33.9	146,159.688	36.8
Total Production-related Waste Managed	**393,963.081**	**100.0**	**415,534.761**	**100.0**	**397,533.459**	**100.0**
Waste Management Activity	**Projected Change 2000-2001** Percent		**Projected Change 2001-2002** Percent		**Projected Change 2000-2002** Percent	
Recycled On-site	-20.5		0 0		-20.5	
Recycled Off-site	163,826 7		0 0		163,826 5	
Energy Recovery On-site	-33 2		-8 4		-38.9	
Energy Recovery Off-site	38 3		0 0		38 3	
Treated On-site	-3.3		-9.7		-12 7	
Treated Off-site	-43 7		0 7		-43 3	
Quantity Released On- and Off-site	33 4		3.7		38.3	
Total Production-related Waste Managed	**5.5**		**-4.3**		**0.9**	

Note: Current year and projected amounts are from Section 8 of Form R for 2000

Source Reduction

In 2000, 57 forms were filed reporting source reduction activities for dioxin and dioxin-like compounds (see Table 3-11). As noted in **Waste Management** in Chapter 1, source reduction—an activity that prevents the generation of waste—is the preferred waste management option. These 57 forms represent 4.5 percent of all forms submitted for dioxin and dioxin-like compounds in 2000.

The most frequently reported source reduction activity was good operating practices (listed on 34 forms). Process modifications came next, with 17 forms, followed by raw materials modification, with 13 forms.

Table 3-11: Number of Forms Reporting Source Reduction Activity, 2000: Dioxin and Dioxin-like Compounds

CAS Number Chemical	Total Form Rs	Forms Reporting Source Reduction Activity		Category of Source Reduction Activity							
			Percent of All Form Rs	Good Operating Practices	Inventory Control	Spill and Leak Prevention	Raw Materials Modifications	Process Modifications	Cleaning and Degreasing	Surface Preparation and Finishing	Product Modifications
	Number	Number	Percent	Number	Number	Number	Number	Number	Number	Number	Number
-- Dioxin and dioxin-like compounds	1,274	57	4 5	34	5	7	13	17	0	1	2

Note: All source reduction activities on a form are counted in the corresponding category Totals do not equal the sum of the categories because forms may report more than one source reduction activity

Mercury and Mercury Compounds

Introduction

Mercury (CAS 7439-97-6) is a heavy, silver-white metal that exists as a liquid at ambient temperatures. It is a precious metal used in chlor-alkali production, wiring devices, switching mechanisms, amalgam dental fillings, and measurement and control instruments. Industries also manufacture and process mercury reagents, catalysts, and medicinal chemicals. Metal ores, coal, crude oil, and fuel oils contain mercury as a trace constituent. Despite industry efforts to reduce mercury use, federal bans on mercury additives in paints and pesticides, and increased state regulation, U.S. industrial demand exceeded 800,000 pounds in 1996 (EPA EA, 1999).

Mercury combines with other elements, such as chlorine, sulfur, or oxygen, to form inorganic mercury compounds or "salts", which are usually white powders or crystals. Mercury also combines with carbon to make organic mercury compounds, the most common being methylmercury (MeHg) (CAS 22967-92-6) which is primarily produced by small organisms in the water and soil.

Methylmercury has no industrial uses; it is formed in the environment from the methylation of the inorganic mercurial ion (EPA, OAQPS, May 2001). Inorganic mercury compounds have been used in the past in laxatives, skin-lightening creams and soaps, and latex paint. In 1990, EPA canceled registration for all interior paints that contained mercury. Mercury use in exterior paint was discontinued after 1991.

Sources and Uses

Primary mining of mercury ore continued at the largest mercury mine in the U.S., the McDermitt mine in Nevada, until 1990 when operations ceased. At the time, the mine produced an average of 986,000 pounds of mercury every year. Although mercury ore mining has been discontinued in the U.S., mercury is produced as a byproduct of gold ore mining operations at mines located in Utah, California, and Nevada (EPA EA, 1999).

Secondary production of mercury involves the recovery of mercury from dismantled equipment and recovery from scrap and industrial wastes using a thermal or chemical extractive process. Major sources of recycled or recovered mercury include scrap from instrument and electrical manufactures (lamps and switches), wastes and sludge from laboratories and electrolytic refining plants, mercury batteries, and dental amalgams (EPA EA, 1999).

Mercury is also found as a trace contaminant in fossil fuels and waste materials. The combination of the elevated temperature of the process and the volatility of mercury and mercury compounds results in their being emitted in the combustion gas exhaust stream. Two general categories of mercury emissions sources exist involving fuel combustion for energy, steam and heat generation, as well as waste disposal processes (EPA, OAQPS, December 1994). These are point sources and area sources. During 1995, 275,400 pounds of mercury were emitted from combustion point sources. Of these emissions 103,600 pounds were attributable to utility boilers, of which coal combustion boilers were the primary producers of mercury (103,200 pounds). The major producers of mercury were municipal waste combustors, producing 59,200 pounds of mercury and commercial/industrial boilers (56,800 pounds) during 1995 (EPA EA, 1999).

In 1994-1995, mercury emissions from "area sources" (i.e., general emissions rather than a specific fixed source), totaled 3.4 tons (7,500 lbs). More than half of these emissions were from lamp breakage and general laboratory use. Other "area sources" in 1994-1995 included dental preparations, landfills, mobile sources, paint use, and agricultural burning.

In terms of human exposure methylmercury is the most important organic mercury compound. Humans are primarily exposed to methylmercury through diet, with fish and fish products being the dominant source. Sources of past exposure to methylmercury include fungicide-treated grains and meat from animals fed such grain. However, fungicides containing mercury are banned in the United States today, and this source of exposure is now negligible (EPA, OAQPS, May 2001).

Most products containing inorganic mercury compounds have now been banned. Limited exposure could occur through the use of old cans of latex paint, which until 1990, could contain mercury compounds to prevent bacterial and fungal growth (EPA, OAQPS, May 2001).

Chemical Characteristics

Persistence and Bioaccumulation

As with other metals, mercury and the mercury in mercury compounds can convert to different oxidation states but the metal can never be destroyed. (EPA, PBT Chemicals Final Rule, October, 1999).

Mercury and mercury compounds have BCF values that range from 7,000 to 36,000. (EPA, PBT Chemicals Final Rule, October, 1999).

Environmental Fate and Transport

The flux of mercury from the atmosphere to land or water at any one location is comprised of contributions from:

- the natural global cycle;
- the global cycle perturbed by human activities;
- regional sources; and
- local sources.

As a naturally occurring element, mercury is present throughout the environment. It is difficult to separate current mercury concentrations by origin (i.e. anthropogenic or natural) due to the continuous cycling of the element in the environment. The Expert Panel on Mercury Atmospheric Processes (1994) estimated that anthropogenic emissions might currently account for 50-75 percent of the total annual input to the global atmosphere. The Panel further reports recent estimates indicating that of the approximately 200,000 tons of mercury emitted in the atmosphere since 1890, about 95 percent resides in terrestrial soils, approximately 3 percent in the ocean surface waters and 2 percent in the atmosphere (EPA, OAQPS and ORD, December 1997).

Mercury in the Atmosphere: Mercury exists as a trace contaminant in fossil fuels. When these materials are combusted, the mercury and mercury compounds vaporize due to their low volatility and the elevated temperature of the combustion chamber, and they are released into the combustion gas exhaust. When these compounds are released to air, they are transported for varying distances and eventually fall to the ground and surface water in a process called atmospheric deposition. The Mercury Study Report to Congress found that the three principal factors governing deposition rates of mercury are emission source locations; amount of divalent and particulate mercury emitted or formed in the atmosphere; and climate and meteorology (EPA, OAQPS and ORD, December 1997).

Mercury in Soil: When mercury reaches soils, it is bound to bulk organic matter and is susceptible to elution in runoff only by being attached to suspended soil or humus. Some Hg(II) (mercuric mercury) will be absorbed onto dissolvable organic ligands and other forms of dissolved organic carbon (DOC) and may then partition to runoff in the dissolved phase. Currently, the atmospheric input of mercury to soil is thought to exceed greatly the amount leached from soil, and the amount of mercury partitioning to runoff is considered to be a small fraction of the amount of mercury stored in soil. The affinity of mercury species for soil results in soil acting as a large reservoir for anthropogenic mercury emissions (EPA, OAQPS and ORD, December 1997).

Plant and Animal Uptake of Mercury: Once in the soil, Hg(II) and methylmercury complexes become available for plant uptake and translocation, potentially resulting in transfer through the terrestrial food chain. The plant uptake however, is an insignificant amount. Overall, mercury concentrations in plants, even those whose main uptake appears to be from the air, are small. Accordingly, livestock typically accumulates little mercury from foraging or silage/grain consumption, and mercury content in meat is low. The terrestrial pathway is not expected to be significant in comparison to the consumption of fish by humans and wildlife (EPA, OAR, December 1997 and OAQPS December 1994).

Mercury in the Freshwater Ecosystem: There are a number of pathways by which mercury can enter the freshwater environment: Hg(II) and methylmercury from atmospheric deposition (wet and dry) can enter water bodies directly, can be transported to water bodies in runoff (bound to suspended soil/humus or attached to DOC), or can leach into the water body from groundwater flow in the upper soil layers. Once in the freshwater system, similar complexation and transformation processes that occur to mercury species in soil will occur, along with additional processes due to the aqueous environment (EPA, OAR, December 1997 and OAQPS December 1994).

Once entering a water body, mercury can remain in the water column, be lost from the lake through drainage water, re-volatilize into the atmosphere, settle into the sediment, or be taken up by aquatic biota. The movements of mercury through any specific water body may be unique. Mercury in the water column, in the sediment, and in other aquatic biota appears to be available to aquatic organisms for uptake (EPA, OAR, December 1997 and OAQPS December 1994).

Methylation is a key step in the entrance of mercury into the food chain. The biotransformation of inorganic mercury species to methylated organic species in water bodies can occur in the sediment and the water column. Methylmercury is highly bioavailable and accumulates in fish through the aquatic food web; nearly 100% of the mercury found in fish muscle tissue is methylated. It is primarily passed to fish via their diets. Larger, longer-lived fish species at the upper end of the food web typically have the highest concentrations of methylmercury. At this stage fish-consuming wildlife and humans can contact it through ingestion. Methylmercury appears to pass from the gastrointestinal tract into the bloodstream more efficiently than the divalent mercury species (EPA, OAR, December 1997 and OAQPS December 1994).

Miscellaneous Environments for Mercury: Mercury may also enter the environment directly through a facility's wastestream. Wastewater sources of mercury include area washdowns and tank clean outs of processes in which mercury or mercury compounds are manufactured, processed, or otherwise used. If a wet air pollution control device (e.g., scrubber) is used at a process generating mercury emissions, mercury can be transferred from the air stream to the water stream. This wastewater may be treated on site, discharged to surface water or a POTW, or transferred off site for other activities (EPA, OAR, December 1997 and OAQPS December 1994).

In addition to the sources listed above, spills and one-time events may also generate a mercury-containing waste stream. Other solid waste sources include sludge from on-site treatment, bags or filters from air pollution control devices, and ash from combustion operations. Solid material spills and ash may also contribute to fugitive emissions (EPA, OAR, December 1997 and OAQPS December 1994).

Health and Environmental Effects

Inhalation and digestion of mercury and organic mercury compounds have been shown to cause: damage to the brain and nervous system, including personality changes, tremors, changes in vision, deafness, muscle incoordination, loss of sensation, and difficulties with memory, ataxia (difficulty in moving , dysarthia (difficulty in articulating words),

paraesthesia (a skin sensation such as burning or itching), impairment of speech, impairment of walking, and in some cases death. Inorganic mercury compounds do not enter the brain as easily as organic mercury or metallic mercury vapor. Animals exposed orally to long-term, high levels of methylmercury or phenylmercury in laboratory studies experienced damage to the kidneys, stomach, and large intestine; changes in blood pressure and heart rate; adverse effects on the developing fetus, sperm, and male reproductive organs; and increases in the number of spontaneous abortions and stillbirths. Adverse effects on the nervous system of animals occur at lower doses than do harmful effects to most other systems of the body. The Department of Health and Human Services (DHHS) and the International Agency for Research on Cancer (IARC) have not classified mercury as to its human carcinogenity. The Environmental Protection Agency has determined that mercury chloride and methylmercury are possible human carcinogens.

Data in both humans and experimental animals show that mercury can produce adverse health effects. The best-known methylmercury-poisoning epidemic occurred in Minamata, Japan. Mercury was used as a catalyst in a chemical factory whose discharged waste sludge was drained into Minamata Bay. Once in Minamata Bay, methylation of the metal by plankton and its subsequent incorporation into the food chain caused acute toxicity in wildlife and humans that consumed fish caught within the region. This accidental poisoning (reportedly causing 52 immediate fatalities) facilitated significant insight into human health effects of mercury.

Using field studies to derive conclusive findings regarding the effect of mercury on wildlife and the environment is difficult because other factors that may contribute to the biological effect under study (for example, reproductive success) are often impossible to control. However, scientists have discovered toxic effects in the field at mercury concentrations that are toxic within the lab, and controlled lab studies have found toxic effects at concentrations that are common in certain environments. In addition, a number of poisonings of birds and wildlife from mercury-treated seed grains have been identified. In Minamata, Japan between 1950 and 1952, birds were observed to have severe difficulty flying and exhibited other abnormal behaviors. In addition, signs of neurological disease including convulsions, and highly erratic movements were observed among domestic animals in Minamata, especially cats that consumed seafood, which was later found to have high mercury levels (EPA, OAQPS and ORD, December 1997).

No conclusive studies examining the effects of mercury on entire ecosystems exist. However, based on the known effects of mercury on humans and wildlife, it is likely that mercury would also adversely affect ecosystems as a whole.

Efforts to Reduce Pollution from the Chemical

Mercury is a priority pollutant across numerous U.S. EPA programs including air, water, hazardous waste and pollution prevention. There are numerous activities currently underway to reduce mercury emissions and releases to the environment. These and other conventional regulatory strategies continue to result in reductions in mercury emissions, especially in cases when mercury is emitted to the environment as a result of trace contamination in fossil fuel or other essential feedstock in an industrial process.

Effective control of mercury emissions may be accomplished using a combination of the following control techniques:

- pollution prevention measures;
- coal cleaning;
- flue gas treatment technologies; and
- regulatory and alternative regulatory approaches.

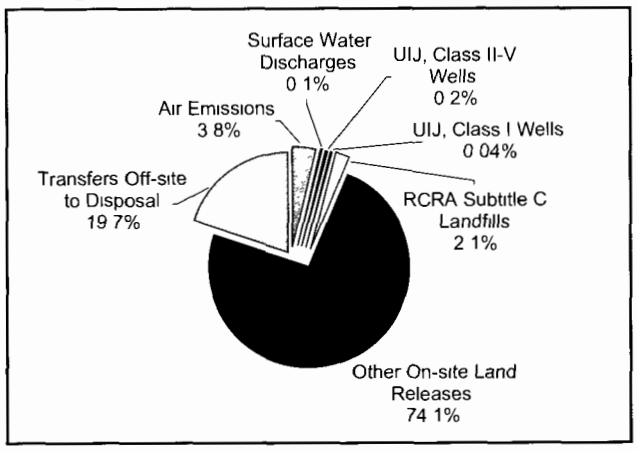
Pollution prevention techniques involve reducing mercury emissions from a particular product or process through changes in processes or inputs.

Applicable pollution prevention measures may include product substitution or process modification. Product substitution is suitable for processes or industries where a mercury substitute or low-mercury constituent has been demonstrated and is available. For example, alternatives to the use of mercury amalgams in dental preparations include gold, ceramic, and porcelain. Another pollution prevention measure is material separation, which is an appropriate approach for processes where mercury is removed from the waste stream prior to fuel combustion, thereby reducing mercury emissions in exhaust gases. For example, numerous communities in the U.S. have implemented household battery separation programs in order to facilitate the reduction of mercury in the waste stream.

Coal cleaning has been used for decades as an approach to improve the quality of boiler/combustion fuels and at the same time to reduce mercury emissions. Coal cleaning uses a combination of crushing and media flotation/separation to remove impurities from coal, which results in reduction of mercury content and a decrease in mercury emissions (EPA, OAQPS and ORD, December 1997).

Flue gas treatment technologies, primarily designed to remove SO_2, are also somewhat effective in removing mercury (and other heavy metals) through a combination of adsorption into droplets, agglomeration, and separation. Flue gas treatment technologies involve the manipulation of operating conditions to induce the condensation of mercury onto particulate matter. Numerous control strategies exist to aid flue gas treatment, including filters (carbon filter beds and selenium filters), scrubbing (wet scrubbing and depleted brine scrubbing), and activated carbon (treated activated carbon adsorption and activated carbon injection) (EPA, OAQPS and ORD, December 1997).

Figure 3-4: Distribution of TRI On-site and Off-site Releases, 2000: Mercury and Mercury Compounds



Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

UIJ = Underground Injection

2000 TRI DATA FOR MERCURY AND MERCURY COMPOUNDS

On-site and Off-site Releases

As shown in Table 3-12, there were 1,596 TRI forms submitted for mercury and mercury compounds for 2000. On- and off-site releases of mercury and mercury compounds totaled 4.3 million pounds, with 4.2 million pounds of this reported as mercury compounds. Almost three-quarters of total

Table 3-12: TRI On-site and Off-site Releases, 2000: Mercury and Mercury Compounds

		On-site Releases							Off-site Releases	
				Underground Injection		On-site Land Releases				
CAS Number	Chemical	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
		Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
7439-97-6	Mercury	566	29,833 13	392 31	1,121 00	255 70	20,280 78	18,164 40	70,047 32	24,490 28	94,537 60
	-- Mercury compounds	1,030	134,659 41	1,909 98	810 72	9,526 10	71,017 18	3,178,819 12	3,396,742 51	825,382 03	4,222,124 54
	Total	**1,596**	**164,492.53**	**2,302.28**	**1,931.72**	**9,781.80**	**91,297.96**	**3,196,983.53**	**3,466,789.83**	**849,872.31**	**4,316,662.14**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

Table 3-13: Quantities of TRI Chemicals in Waste Managed, 2000: Mercury and Mercury Compounds

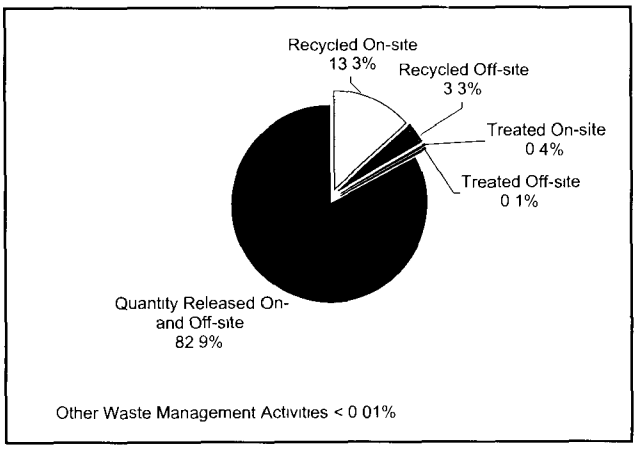
CAS Number	Chemical	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-production-related Waste Managed Pounds
7439-97-6	Mercury	301,682 87	64,712.99	67.73	69 01	365.53	5,334.76	87,957 08	460,189.97	4,903 71
	-- Mercury compounds	345,257 18	97,216 48	10 00	57 00	19,402 75	529 84	3,953,200 59	4,415,673 84	13,240 17
	Total	**646,940.05**	**161,929.47**	**77.73**	**126.01**	**19,768.28**	**5,864.61**	**4,041,157.67**	**4,875,863.82**	**18,143.88**

Note: Data are from Section 8 of Form R

releases of mercury and mercury compounds were other on-site land releases (that is, other than RCRA subtitle C landfills), which totaled 3.2 million pounds (see Figure 3-4). (Types of on-site land releases are described in Box 1-4 in Chapter 1.) The second-largest release type was off-site releases (transfers to disposal), which totaled 849,872 pounds and accounted for one-fifth of total releases.

Much smaller amounts of other types of releases were reported. Air emissions totaled 164,493 pounds or 3.8 percent of total releases of mercury and mercury compounds. On-site land releases to RCRA subtitle C landfills were 91,298 pounds and surface water discharges were 2,302 pounds. Underground injection of mercury and mercury compounds was 9,782 pounds to Class II-V wells and 1,932 pounds to Class I wells.

Figure 3-5: Quantities of TRI Chemicals in Waste, 2000: Mercury and Mercury Compounds



Note: Data are from Section 8 of Form R

Waste Management Data

Quantities of TRI Chemicals in Waste

Production-related waste of mercury and mercury compounds totaled 4.9 million pounds in 2000, as shown in Table 3-13. Over 90.5 percent was reported as mercury compounds.

Almost 82.9 percent (4.0 million pounds) of the total production-related waste was released on- or off-site (see Figure 3-5). On-site recycling accounted for 13.3 percent, or 646,940 pounds and off-site recycling for 3.3 percent, or 161,929 pounds. Other types of waste management accounted for less than one percent of the total.

Transfers Off-site for Further Waste Management/Disposal

Transfers off-site for further waste management and disposal of mercury and mercury compounds totaled 1.1 million pounds in 2000 (see Table 3-14). Transfers of mercury compounds accounted for 88.8 percent of the total.

Other transfers off-site to disposal were 898,151 pounds or 82.9 percent of all transfers for further waste management and disposal (see Figure 3-6), and transfers to recycling were 185,173 pounds or 17.1 percent. Other types of transfers off-site for further waste management and disposal of mercury and mercury compounds totaled less than 500 pounds for 2000.

TRI Data by State

Facilities in Texas, with 105 forms, submitted the largest number of forms in 2000 for mercury and

Table 3-14: TRI Transfers Off-site for Further Waste Management/Disposal, 2000: Mercury and Mercury Compounds

CAS Number Chemical	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs: Metals and Metal Compounds Pounds	Transfers to POTWs: Non-metal TRI Chemicals Pounds	Other Off-site Transfers* Pounds	Other Off-site Transfers to Disposal** Pounds	Total Transfers for Further Waste Management/ Disposal Pounds
7439-97-6 Mercury	93,376.58	0.00	58.00	121 90	0.00	0.00	27,784.56	121,341.04
-- Mercury compounds	91,796 09	1 00	4 90	200 75	0 00	0 00	870,366 82	962,369 55
Total	**185,172.66**	**1.00**	**62.90**	**322.65**	**0.00**	**0.00**	**898,151.38**	**1,083,710.59**

Note: Total Transfers Off-site for Further Management/Disposal are from Section 6 of Form R

* Other Off-site Transfers are transfers reported without a valid waste management code
** Does not include transfers to POTWs of metals and metal compounds

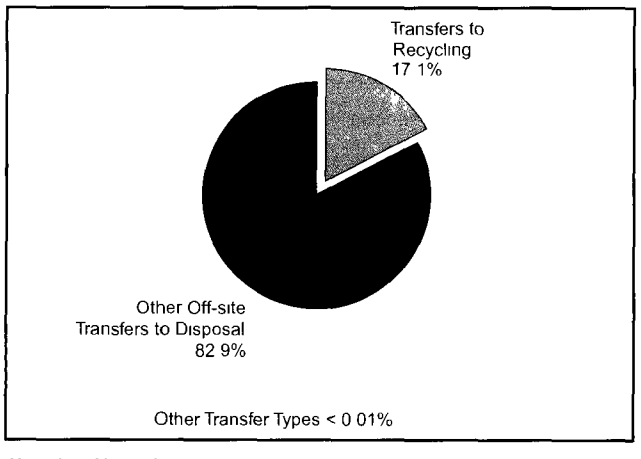
mercury compounds. Pennsylvania and Ohio ranked second and third, with 103 and 96 forms, respectively.

On- and Off-site Releases

In 2000, facilities in Nevada reported the largest total on- and off-site releases of mercury and mercury compounds (see Table 3-15). They reported a total of 3.0 million pounds, or 69.8 percent of the total for mercury and mercury compounds in 2000. This was almost five times the amount of releases from facilities in Texas, which reported the second largest amount, 606,800 pounds or 14.1 percent.

Almost all of Nevada's releases of mercury and mercury compounds were as other on-site land

Figure 3-6: Distribution of TRI Transfers for Further Waste Management/Disposal, 2000: Mercury and Mercury Compounds



Note: Total Transfers Off-site for Further Management/Disposal *are from* Section 6 of Form R

releases (that is, other than RCRA subtitle C landfills). Such releases for Nevada were 3.0 million pounds or 93.8 percent of all such on-site land releases of mercury and mercury compounds in 2000.

Texas facilities reported the largest amount of off-site releases (transfers to disposal) of any state, with 577,900 pounds or 68.0 percent of total off-site releases of mercury and mercury compounds in 2000. Texas facilities also reported the largest air emissions, with 19,800 pounds or 12.1 percent of all air emissions of mercury and mercury compounds in 2000.

As shown in Map 3-2, releases of mercury and mercury compounds are quite concentrated geographically. The top two states, Nevada and Texas, released 3.6 million pounds of the 4.3 million-pound total. The next four states, Pennsylvania, Illinois, Massachusetts and California, each released between 60 and 80 million pounds, almost one-tenth the amount released by Texas, the state with the second largest releases.

Waste Management Data

The state with the largest quantity of total production-related waste of mercury and mercury compounds in 2000 was Nevada (see Table 3-15). Nevada's 3.1 million pounds of total production-related waste accounted for 62.7 percent of the total, almost three times that of any other state. Texas ranked second with 339,068 pounds, and

Table 3-15: Summary of TRI Information by State, 2000: Mercury and Mercury Compounds

		On-site Releases							Off-site Releases	
				Underground Injection		On-site Land Releases				
State	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
	Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
Alabama	41	6,591.23	51.32	0.00	19 00	32,023.00	1,707.65	40,392 20	2,198 36	42,590.56
Alaska	7	178 63	0 00	0 00	9,367 00	0 00	6,821 80	16,367 43	6 15	16,373 58
Arizona	19	2,101.19	0.00	0 00	0.00	0.00	33,627.55	35,728 75	204 58	35,933 32
Arkansas	18	1,563 56	4 59	0 00	0 00	0 00	146 59	1,714 74	12,169 40	13,884 14
California	94	5,598 29	5 14	0.00	0 20	6,177.70	42,034 92	53,816.26	6,584.49	60,400.75
Colorado	28	912 68	17 15	0 00	0 00	677 70	1,523 90	3,131 43	474 19	3,605 62
Connecticut	15	117.67	0 20	0 00	0 00	0.00	0 00	117.87	13,953 84	14,071 71
Delaware	8	1,552 50	21 20	0 00	0 00	0 00	1,932.40	3,506.10	265 56	3,771.66
District of Columbia	1	8.00	0.00	0 00	0.00	0.00	0.00	8 00	0.00	8 00
Florida	45	2,167 45	14 71	0 00	0 00	454 00	2,164 51	4,800 67	408 93	5,209 60
Georgia	31	4,928.61	18 57	0.00	0 00	0 00	1,301.70	6,248.88	98 72	6,347.60
Hawaii	5	39 28	3 50	0 00	5 60	0 00	0 00	48 38	51 14	99 52
Idaho	9	828.57	2 00	0 00	0.00	0.00	5,173 50	6,004.07	8 87	6,012.95
Illinois	70	6,007 12	18 33	0 00	0 00	8,835 00	1,636 97	16,497 42	51,906 21	68,403 63
Indiana	52	7,420 26	307.71	0.00	0 00	1,100 00	2,523 53	11,351.50	5,751.82	17,103 32
Iowa	43	2,748 52	1 00	0 00	0 00	0 00	146 18	2,895 70	625 27	3,520 96
Kansas	21	2,696 93	0 50	0 00	0 00	0 00	676.00	3,373.43	163 75	3,537.18
Kentucky	46	5,296 63	566 28	0 00	254 70	3 62	2,677 91	8,799 13	9,884 30	18,683 43
Louisiana	46	3,571.36	77 60	445.32	0.00	1,000 00	555 43	5,649.71	8,334 27	13,983 98
Maine	5	50 60	1 71	0 00	0 00	0 00	1 80	54 11	40 10	94 21
Maryland	16	2,513 85	1 86	0.00	134 00	0 00	325.10	2,974 81	351.10	3,325.91
Massachusetts	17	341 94	0 10	0 00	0 00	0.00	3 40	345 44	60,883.49	61,228 94
Michigan	52	3,999.25	495 70	0 00	0 00	12,454.00	1,060 08	18,009.03	4,816 91	22,825.94
Minnesota	21	1,774 41	0.06	0 00	0 00	0 00	890 04	2,664 51	326 19	2,990 70
Mississippi	13	814 87	6.24	57 40	0.00	0.00	335 80	1,214.31	52 26	1,266.58
Missouri	34	2,971 38	3 10	0 00	0 00	29 00	975 99	3,979 47	414 68	4,394 15
Montana	18	4,288.82	0 55	0.00	0 00	0 00	5,282 20	9,571 57	970.81	10,542 38
Nebraska	13	638 73	0 03	0 00	0 00	0 00	497 00	1,135 75	137 90	1,273 65
Nevada	30	12,772 28	1.00	0 00	0.30	0.00	2,999,941 36	3,012,714.94	19.72	3,012,734.66
New Hampshire	5	31 00	0 00	0 00	0 00	0 00	12 00	43 00	91 80	134 80
New Jersey	30	940.06	3.60	0.00	1.00	17 00	0.00	961 66	619.25	1,580.90
New Mexico	11	1,402 44	0 60	0 00	0 00	0 00	7,817 00	9,220 04	614.20	9,834 24
New York	42	1,366 93	55 55	0 00	0.00	570.00	1,157 61	3,150.09	1,730 78	4,880.87
North Carolina	39	3,535 14	23 06	0 00	0 00	4 30	1,820 90	5,383 40	396 45	5,779 84
North Dakota	12	2,469.10	0.10	0.00	0.00	0.00	241 30	2,710.50	364 30	3,074 80
Ohio	96	11,940 27	102 16	740 00	0 00	204 45	4,842 88	17,829.76	3,981 09	21,810 85
Oklahoma	20	1,343 72	3.39	0.00	0.00	1,495.00	141 97	2,984.08	634.26	3,618.34
Oregon	19	461 56	1 02	0.00	0 00	15,534 10	521 55	16,518 23	369 86	16,888 09
Pennsylvania	103	9,983.39	25 04	0 00	0.00	34 00	8,325.90	18,368.34	60,016 06	78,384 40
Puerto Rico	18	239 03	9 40	0 00	0 00	0 00	0 00	248 44	303 63	552 07
Rhode Island	6	0 10	0.00	0 00	0.00	0.00	0.00	0 10	3.43	3.53
South Carolina	36	2,578 81	32 87	0 00	0 00	0 00	1,327 55	3,939 23	158 97	4,098 20
South Dakota	6	212 21	0 02	0.00	0 00	0 00	41 30	253 53	6.00	259.53
Tennessee	45	4,821 79	99 67	0 00	0 00	782 00	2,488 53	8,191 99	1,743 87	9,935 86
Texas	105	19,847 99	62 89	689.00	0.00	125 80	8,153.76	28,879.43	577,922.58	606,802 01
Utah	21	1,007 81	8 20	0 00	0 00	9,586 00	35,627 81	46,229 82	3,220 15	49,449 97
Vermont	1	1.00	0.00	0 00	0.00	0.00	0.00	1.00	3,600 01	3,601 01
Virgin Islands	4	757 00	0 00	0 00	0 00	0 00	289 00	1,046 00	37 68	1,083 68
Virginia	42	4,251.46	24 86	0.00	0 00	0 00	857.94	5,134 26	1,707.67	6,841.93
Washington	26	582 65	50 69	0 00	0 00	2 00	1,651 20	2,286 54	9,350 62	11,637 16
West Virginia	31	7,044.62	174.51	0 00	0.00	0.00	5,933.50	13,152.63	1,126 87	14,279.49
Wisconsin	42	3,491 47	4 50	0 00	0 00	189 29	110 21	3,795 48	713 56	4,509 04
Wyoming	18	1,688 38	0 00	0 00	0.00	0 00	1,658 31	3,346.69	56 22	3,402.91
Total	**1,596**	**164,492.53**	**2,302.28**	**1,931.72**	**9,781.80**	**91,297.96**	**3,196,983.53**	**3,466,789.83**	**849,872.31**	**4,316,662.14**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

Table 3-15: Summary of TRI Information by State, 2000: Mercury and Mercury Compounds (continued)

State	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site	Total Production-related Waste Managed	Non-production-related Waste Managed
	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Pounds	Pounds	Pounds
Alabama	20,008 81	47.08	0 00	8.00	0.00	29.00	42,673.69	62,766.58	0.00
Alaska	75 00	0 10	0 00	0 00	0 13	3 00	16,212.17	16,290.40	0 00
Arizona	4,380.00	1,870.17	0.00	0.00	17.00	70.00	35,749.38	42,086.55	0.00
Arkansas	0 00	3,142 10	0 00	38 00	0 00	0 00	14,044 78	17,224 88	686 00
California	811.00	8,771.74	0.00	0.00	1.00	72.61	63,591.89	73,248.24	1,150.00
Colorado	3 70	30 00	0 00	0 00	0 00	0 00	3,654 28	3,687 98	1 50
Connecticut	0.00	3,956.94	0.00	0.00	0.00	62.60	13,971.17	17,990.71	0.20
Delaware	7,880 00	3 00	0 00	0 00	0 00	0 00	5,078 96	12,961 96	1.00
District of Columbia	0 00	40 00	0.00	0 00	0.00	0.00	48.00	88.00	0.00
Florida	0.00	79 01	0 00	0 00	0 00	1 00	4,507 16	4,587 17	0 00
Georgia	7.57	5,680.24	0.00	0.00	0.00	30 84	6,418.17	12,136.82	0.00
Hawaii	0 00	0 00	0 00	0 00	0 00	0 00	98 00	98 00	0 00
Idaho	0.00	137.17	0 00	0.00	0.00	0 00	18,949.88	19,087.05	0.06
Illinois	25 82	6,495 55	0 00	0 00	0 20	7 91	79,775 05	86,304 53	0 05
Indiana	5,215.30	1,701.00	0.00	0.00	2.00	2.22	15,783.21	22,703.73	9.00
Iowa	0 00	96 82	0 00	0 00	12 00	12 30	3,591 92	3,713 04	0.01
Kansas	0.00	864.00	0.00	0.00	0.00	0 00	2,864.20	3,728.20	0.00
Kentucky	15,000 00	11,103 00	0 00	0 00	0 00	0 00	19,021.07	45,124 07	1 00
Louisiana	44,250.00	4,097.18	0.00	0.00	729.41	163.00	14,464.70	63,704.29	0.00
Maine	0.00	0.00	0 00	0 00	0 00	0 00	101 00	101 00	0 00
Maryland	0.00	103.60	0 00	0.00	0.00	0.00	3,199.95	3,303.55	0.00
Massachusetts	1 80	43,140 08	0 00	0 00	0 10	2,276 87	46,944.09	92,362 94	0 16
Michigan	4.00	8,006.75	0.00	0.00	0 00	30.65	22,717 37	30,758 77	0.00
Minnesota	14 69	405 62	0 00	0 00	0 00	0 00	2,977.65	3,397 95	0.00
Mississippi	46 55	298.05	0 00	0.00	0.00	0 00	1,342 78	1,687.38	0 00
Missouri	0 00	193 75	0 00	0 00	80 00	46 98	4,483 65	4,804 38	0 00
Montana	122,562.00	0.45	0.00	0.00	0 00	7.10	11,063.31	133,632.86	91.00
Nebraska	25 00	103 51	0 00	0 00	2,801 00	0 00	1,163.00	4,092 51	0 00
Nevada	49,185.05	1,816.01	0 00	0.00	193.00	0.00	3,004,077.22	3,055,271 28	0.00
New Hampshire	0 00	0 00	0 00	0 00	0 00	44 00	134 90	178.90	0.00
New Jersey	52.50	2,001.50	0 00	0.00	0.00	210.60	1,500.29	3,764.89	0.10
New Mexico	0.00	9 50	0 00	0.00	0 00	0 00	10,397 39	10,406.89	598 00
New York	0.00	875.00	11 73	23.01	10.00	415.00	3,712.59	5,047.33	0.00
North Carolina	0 00	51 50	0 00	0 00	0 00	32.05	6,059 49	6,143 04	0.00
North Dakota	0.00	2 40	0.00	0.00	0.00	0.30	2,825.20	2,827.90	0.00
Ohio	6,604 98	18,621 92	0 00	0 00	18 00	4 90	23,609 76	48,859 56	5 70
Oklahoma	0.00	0.00	0 00	0.00	0.00	2.00	3,622.63	3,624.63	211 00
Oregon	33 00	281 00	0 00	55 00	0 00	0 00	16,887 80	17,256 80	0.00
Pennsylvania	117,597 27	1,331 83	0.00	0 00	0.00	107.67	77,774.08	196,810.85	0.80
Puerto Rico	0 00	4 25	0 00	0 00	0 00	0 00	425 27	429 52	0 00
Rhode Island	0.20	78.00	0.00	0.00	0.00	0.00	3 53	81 73	0 00
South Carolina	270 00	1,052 00	0 00	0 00	13 10	21 79	4,477 88	5,834 76	0 00
South Dakota	0.00	9.00	0.00	0.00	0 00	0.00	249.53	258.53	0.00
Tennessee	16,635 00	303 50	0 00	0 00	0 00	1,435 00	8,385 51	26,759 01	1,406 10
Texas	12,756.00	4,267.04	66 00	2.00	43.00	352.73	321,581.35	339,068.12	2,382 20
Utah	2 00	50 00	0 00	0 00	15,530 24	3 60	46,280 70	61,866 54	11,600 00
Vermont	0.00	3,500.00	0 00	0 00	0 00	0.00	2.00	3,502.00	0.00
Virgin Islands	0 00	0 00	0 00	0 00	0 00	0.00	1,084 00	1,084 00	0 00
Virginia	0.00	331.01	0.00	0.00	0.00	168.20	5,876.89	6,376.10	0 00
Washington	110,000 00	20,959 20	0 00	0 00	318 10	16 20	25,660 38	156,953 88	0 00
West Virginia	105,510.00	243.80	0.00	0.00	0.00	193 80	13,972.41	119,920.01	0.00
Wisconsin	7,982 80	5,774 10	0 00	0 00	0 00	40 50	4,653 41	18,450.81	0 00
Wyoming	0 00	0 00	0 00	0.00	0.00	0.19	3,413.01	3,413.20	0.00
Total	**646,940.05**	**161,929.47**	**77.73**	**126.01**	**19,768.28**	**5,864.61**	**4,041,157.67**	**4,875,863.82**	**18,143.88**

Note: Data are from Section 8 of Form R

Table 3-16. Summary of TRI Information by Industry, 2000: Mercury and Mercury Compounds

			On-site Releases							Off-site Releases	
					Underground Injection		On-site Land Releases				
SIC Code	Industry	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
		Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
20	Food	30	549 13	0 00	0 00	0 00	0 00	20 99	570 12	248 10	818 22
21	Tobacco	4	68 84	2 00	0 00	0 00	0 00	0 00	70 84	155 00	225 84
22	Textiles	1	236 00	0 00	0 00	0 00	0 00	0 00	236 00	0 00	236 00
24	Lumber	10	178 14	0 00	0 00	0 00	0 00	0 04	178 18	0 00	178 18
26	Paper	106	2,650 30	76 88	0 00	0 00	25 39	625 12	3,377 69	2,019 18	5,396 87
27	Printing	1	79 00	0 00	0 00	0 00	0 00	0 00	79 00	0 00	79 00
28	Chemicals	176	20,019 43	169 25	70 72	1 00	988 29	5,603 03	26,851 73	18,890 36	45,742 09
29	Petroleum	123	5,712 46	110 07	3 00	5 80	0 00	220 13	6,051 46	5,667 42	11,718 88
30	Plastics	11	10 98	0 00	0 00	0 00	0 00	0 00	10 98	160 77	171 75
32	Stone/Clay/Glass	159	12,222 62	2 14	0 00	254 70	0 00	2,478 24	14,957 70	41 79	14,999 50
33	Primary Metals	129	10,708 74	343 21	0 00	0 00	1,125 80	7,492 10	19,669 84	71,319 17	90,989 01
34	Fabricated Metals	11	36 35	0 00	0 00	0 00	0 00	0 00	36 35	3 00	39 35
35	Machinery	6	12 44	0 00	0 00	0 00	0 00	0 60	13 04	57 11	70 15
36	Electrical Equip	37	484 85	0 62	0 00	0 00	0 00	0 01	485 49	5,599 99	6,085 48
37	Transportation Equip	12	117 35	0 00	0 00	0 00	0 00	0 00	117 35	177 91	295 27
38	Measure/Photo	14	66 53	4 00	0 00	0 00	29 00	0 00	99 53	1,460 28	1,559 81
39	Miscellaneous	3	0 00	0 00	0 00	0 00	0 00	0 00	0 00	7 00	7 00
	Multiple codes 20-39	48	1,490 00	29 02	0 00	0 00	25 98	223 90	1,768 90	8,366 97	10,135 87
	No codes 20-39	10	113 60	5 00	0 00	0 00	0 00	31 00	149 60	111 77	261 37
	Subtotal Original Industries	**891**	**54,756.77**	**742 19**	**73 72**	**261.50**	**2,194.46**	**16,695 17**	**74,723 80**	**114,285 83**	**189,009 63**
10	Metal Mining	59	13,017 68	11 40	0 00	9,367 30	0 00	3,127,820 85	3,150,217 24	93 11	3,150,310 35
12	Coal Mining	46	258 82	228 58	0 00	153 00	0 00	5,821 93	6,462 34	20 00	6,482 34
491/493	Electric Utilities	504	94,881 23	1,317 99	0 00	0 00	455 00	46,116 57	142,770 80	16,445 35	159,216 15
5169	Chemical Wholesale Distributors	2	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
5171	Petroleum Terminals/Bulk Storage	32	9 67	0 00	0 00	0 00	0 00	0 00	9 67	5 87	15 54
4953/7389	Hazardous Waste/Solvent Recovery	62	1,568 36	2 12	1,858 00	0 00	88,648 50	529 00	92,605 98	719,022 15	811,628 13
	Subtotal for New Industries	**705**	**109,735.77**	**1,560.10**	**1,858.00**	**9,520.30**	**89,103.50**	**3,180,288.36**	**3,392,066.02**	**735,586.48**	**4,127,652.51**
	Total	**1596**	**164,492 53**	**2,302.28**	**1,931 72**	**9,781 80**	**91,297 96**	**3,196,983.53**	**3,466,789 83**	**849,872 31**	**4,316,662 14**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

Map 3-2: Total On- and Off-site Releases, 2000: Mercury and Mercury Compounds

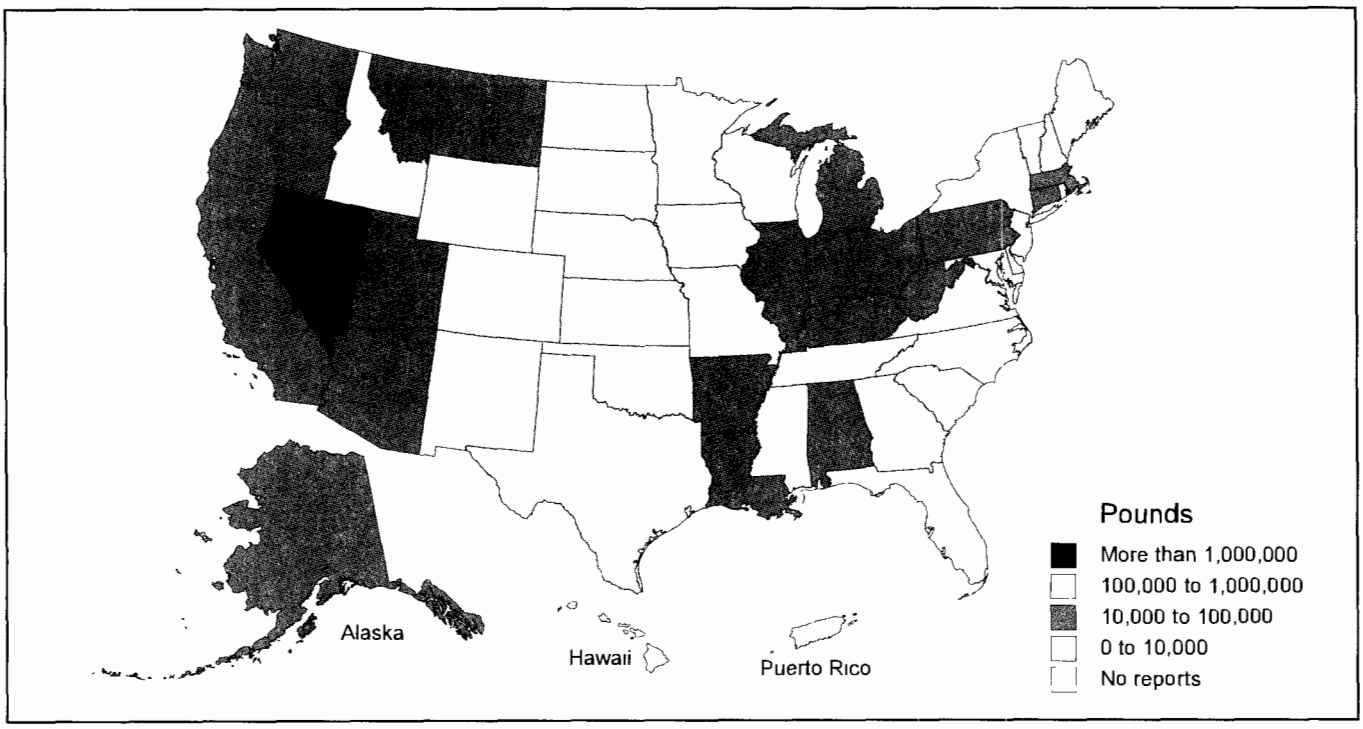


Table 3-16. Summary of TRI Information by Industry, 2000: Mercury and Mercury Compounds (continued)

SIC Code	Industry	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-production-related Waste Managed Pounds
20	Food	0 00	100 48	0 00	0 00	0 00	28 00	907 09	1,035 57	0.00
21	Tobacco	0 00	0 00	0 00	0 00	0 00	155 00	70 84	225 84	0 00
22	Textiles	0 00	0 00	0 00	0.00	0 00	0 00	240 00	240.00	0 00
24	Lumber	0 00	10 01	0 00	0 00	0 00	0 00	179 08	189 09	0 00
26	Paper	0.00	164 30	0 00	0 00	0 00	297 19	3,859 34	4,320 83	0 00
27	Printing	0 00	0 00	0 00	0 00	0 00	0 00	79 00	79 00	0 00
28	Chemicals	231,497 80	18,640 52	0 00	23.00	752 51	572 88	49,469 77	300,956 48	2,888 20
29	Petroleum	122 74	545 98	10 00	10 00	29 00	158 86	12,134 25	13,010 83	218 10
30	Plastics	0 00	0 00	0 00	55 00	0 00	35 98	29 77	120 75	0 10
32	Stone/Clay/Glass	4,591 80	235 52	67 73	0 01	0 00	19 51	14,432 47	19,347 04	643 01
33	Primary Metals	128,552 17	14,742 18	0 00	0 00	0.00	112 20	85,120 35	228,526.91	6,378 50
34	Fabricated Metals	0 00	248 00	0 00	0 00	0.00	15 00	59 35	322 35	0 00
35	Machinery	0 00	25 22	0 00	0 00	0.00	17 00	70 15	112 37	0 00
36	Electrical Equip	0 00	17,216 84	0 00	0 00	0 10	153 40	2,554 65	19,924 99	5 90
37	Transportation Equip	0 00	230 12	0 00	0 00	0.00	125 00	237 20	592 32	9.06
38	Measure/Photo	0 00	7,390 50	0 00	0 00	0.00	1,460 00	72 33	8,922 83	1,401 00
39	Miscellaneous	0 00	9 00	0 00	0.00	0.00	0.00	7 00	16.00	0.00
	Multiple codes 20-39	222,000 98	469 20	0 00	0 00	0 00	377 17	25,255 92	248,103 27	0 00
	No codes 20-39	0.00	32.02	0 00	0 00	10.13	32 25	283 23	357 63	0 00
	Subtotal Original Industries	**586,765.50**	**60,059 90**	**77 73**	**88.01**	**791.74**	**3,559.44**	**195,061.79**	**846,404.10**	**11,543 87**
10	Metal Mining	49,312 05	1,829 10	0 00	0 00	193.00	82.00	3,148,193 65	3,199,609 80	6,000 00
12	Coal Mining	0 00	80 00	0 00	0 00	0.00	0 00	6,071 31	6,151 31	598 00
491/493	Electric Utilities	25 00	3,030 77	0 00	0 00	97 00	15 10	158,344.00	161,511 87	2.01
5169	Chemical Wholesale Distributors	0 00	0 00	0 00	0 00	0 00	2 00	0 00	2 00	0 00
5171	Petroleum Terminals/Bulk Storage	0 00	0 00	0.00	0 00	0 00	1 00	9 67	10 67	0 00
4953/7389	Hazardous Waste/Solvent Recovery	10,837 50	96,929 70	0 00	38 00	18,686 54	2,205 07	533,477 26	662,174 07	0 00
	Subtotal New Industries	**60,174.55**	**101,869.57**	**0.00**	**38.00**	**18,976.54**	**2,305.17**	**3,846,095.88**	**4,029,459.72**	**6,600.01**
	Total	**646,940 05**	**161,929 47**	**77.73**	**126.01**	**19,768 28**	**5,864.61**	**4,041,157.67**	**4,875,863.82**	**18,143.88**

Note: Data are from Section 8 of Form R

Pennsylvania ranked third with 196,811 pounds.

Nevada released on- and off-site almost three quarters (3.0 million pounds or 74.3 percent) of all mercury and mercury compounds releases in 2000. Texas reported the second largest quantity released on- and off-site, 321,581 pounds or 8.0 percent.

Montana, the fifth-ranked state for total production-related waste, reported the largest amount of mercury and mercury compounds recycled on-site, 122,562 pounds or 18.9 percent of all on-site recycling. Pennsylvania, the fourth ranked for total production-related waste, reported the second largest amount recycled on-site, with 117,597 pounds or 18.2 percent of all on-site recycling of mercury and mercury compounds in 2000.

TRI Data by Industry (2-digit SIC Code)

On- and Off-site Releases

Metal mines reported the largest total releases of mercury and mercury compounds in 2000, 3.2 million pounds or 73.0 percent of the total on- and off-site releases (see Table 3-16). Metal mines reported the largest other on-site land releases (that is, land releases other than RCRA subtitle C landfills), with 3.1 million pounds or 97.8 percent of all such releases.

The hazardous waste/solvent recovery industries reported the second largest total releases. Their 811,628 pounds of releases accounted for 18.8 percent of total releases of mercury and mercury compounds in 2000. These industries reported the largest off-site releases (transfers to disposal) of mercury and mercury compounds, with 719,022 pounds or 84.6 percent of all off-site releases.

Electric utilities reported the third largest total releases, with 159,216 pounds or 3.7 percent of the total releases of mercury and mercury compounds in 2000. They reported the largest air emissions of any industry sector, with 94,881 pounds or 57.7 percent of all air emissions of mercury and mercury compounds.

Table 3-17: Current Year and Projected Quantities of TRI Chemicals in Waste, 2000: Mercury and Mercury Compounds

Waste Management Activity	Current Year 2000 Total Pounds	Current Year 2000 Percent of Total	Projected 2001 Total Pounds	Projected 2001 Percent of Total	Projected 2002 Total Pounds	Projected 2002 Percent of Total
Recycled On-site	646,940 05	13.3	474,362 79	10 5	438,363 79	9.8
Recycled Off-site	161,929 47	3 3	102,599 16	2 3	96,777 07	2 2
Energy Recovery On-site	77.73	0 0	83.36	0 0	83 36	0 0
Energy Recovery Off-site	126 01	0 0	35 00	0 0	36 00	0 0
Treated On-site	19,768 28	0.4	16,634 67	0.4	16,637.67	0.4
Treated Off-site	5,864 61	0 1	4,966 47	0 1	4,432 47	0 1
Quantity Released On- and Off-site	4,041,157.67	82.9	3,913,926 85	86.7	3,904,436 17	87.5
Total Production-related Waste Managed	4,875,863 82	**100.0**	4,512,608 30	**100.0**	4,460,766 53	**100.0**
Waste Management Activity	**Projected Change 2000-2001** Percent		**Projected Change 2001-2002** Percent		**Projected Change 2000-2002** Percent	
Recycled On-site	-26.7		-7.6		-32.2	
Recycled Off-site	-36 6		-5 7		-40 2	
Energy Recovery On-site	7 2		0.0		7.2	
Energy Recovery Off-site	-72 2		2 9		-71 4	
Treated On-site	-15 9		0.0		-15 8	
Treated Off-site	-15 3		-10 8		-24 4	
Quantity Released On- and Off-site	-3 1		-0 2		-3 4	
Total Production-related Waste Managed	**-7.5**		**-1.1**		**-8.5**	

Note· Current year and projected amounts are from Section 8 of Form R for 2000

Waste Management

The metal mining industry reported the largest amount of total production-related waste of mercury and mercury compounds in 2000 (see Table 3-16). With 3.2 million pounds of production-related waste, it accounted for 65.6 percent of all production-related waste. Over 98 percent of the production-related waste reported by the metal mining industry was released on- and off-site.

The hazardous waste/solvent recovery industries reported the second largest amount of production-related waste, with 662,174 pounds or 13.6 percent of the total for mercury and mercury compounds in 2000. Over 80.5 percent of the production-related waste reported by the hazardous waste/solvent recovery industries (553,477 pounds) was released on- and off-site. The hazardous waste/solvent recovery industries reported the largest amounts recycled off-site and treated on-site, with 96,930 pounds recycled off-site and 18,687 pounds treated on-site.

The chemical industry reported the third largest amount of total production-related waste, with 300,956 pounds. This industry reported the largest amount recycled on-site, with 231,498 pounds. On-site recycling by the chemical industry accounted for 76.9 percent of that industry's production-related waste.

Table 3-18: Forms Reporting Source Reduction Activity, by Category, 2000: Mercury and Mercury Compounds

CAS Number	Chemical	Total Form Rs Number	Forms Reporting Source Reduction Activity Number	Forms Reporting Source Reduction Activity Percent of All Form Rs Percent	Category of Source Reduction Activity: Good Operating Practices Number	Inventory Control Number	Spill and Leak Prevention Number	Raw Materials Modifications Number	Process Modifications Number	Cleaning and Degreasing Number	Surface Preparation and Finishing Number	Product Modifications Number
7439-97-6	Mercury	566	39	6 9	20	2	4	5	24	0	0	3
	-- Mercury compounds	1,030	65	6 3	34	6	11	12	16	0	0	1
	Total	**1,596**	**104**	6 5	**54**	**8**	**15**	**17**	**40**	**0**	**0**	**4**

Note: All source reduction activities on a form are counted in the corresponding category Totals do not equal the sum of the categories because forms may report more than one source reduction activity

Projected Quantities of TRI Chemicals Managed in Waste, 2000-2002

TRI facilities expected to decrease their production-related waste of mercury and mercury compounds between 2000 and 2002 by 8.5 percent, from 4.9 million pounds to 4.5 million pounds (see Table 3-17). The decrease was projected to occur in almost all types of waste management. The quantity released on- and off-site, the largest type of waste management activity, was expected to decline by 3.4 percent. On- and off-site releases are the least-desirable outcome under the waste management hierarchy described in **Waste Management** in Chapter 1 (Figure 1-2).

From 2000 to 2001, a decrease of 7.5 percent was projected, followed by a decrease of 1.1 percent from 2001 to 2002.

Source Reduction

In 2000, 104 forms were filed reporting source reduction activities for mercury and mercury compounds (see Table 3-18). As noted in **Waste Management** in Chapter 1, source reduction—an activity that prevents the generation of waste—is the preferred waste management option. These 104 forms represented 6.5 percent of all forms submitted for mercury and mercury compounds in 2000.

The most frequently reported source reduction activity was good operating practices (listed on 54 forms). Process modification came next, with 40 forms, followed by raw materials modification, with 17 forms, and spill and leak prevention, with 15 forms.

TRI Data for Mercury and Mercury Compounds before 2000

Reporting for mercury and mercury compounds before 2000 was based on the higher TRI thresholds of 25,000 pounds for manufacture or processing of the chemical and 10,000 pounds for otherwise using the chemical. For the reporting year 2000, these thresholds were reduced to 10 pounds for manufacture, processing or otherwise using mercury or mercury compounds. Lowering the threshold, in effect, adds reports by those facilities whose activities were below the higher threshold. Consequently, the amounts for 2000 are not comparable with those for prior years.

Box 3-3 has TRI data reported for mercury and mercury compounds before 2000.

Box 3-3: TRI Data for Mercury and Mercury Compounds Before 2000

Following is a brief summary of releases and transfers and total production-related waste for mercury and mercury compounds for 1998 and 1999. This table includes reporting by both original and new industries.

TRI Data for Mercury and Mercury Compounds, 1998-1999

	1998	**1999**	**Change 1998-1999**	
	Number	Number	Number	Percent
Forms	57	78	21	36.8
	Pounds	Pounds	Pounds	Pounds
On-site Releases	9,240,171	3,101,092	-6,139,079	-66.4
Off-site Releases (Transfers to Disposal)	121,896	163,707	41,811	34.3
Total On- and Off-site Releases	**9,362,067**	**3,264,799**	**-6,097,268**	**-65.1**
Total Production-related Waste Managed	**10,602,922**	**4,289,466**	**-6,313,457**	**-59.5**

Mercury and mercury compounds have been on the TRI chemical list since the beginning of TRI. The following is a summary of releases and transfers for 1988-1999. This table does not include reporting by new industries for 1998 and 1999 since new industries did not report to TRI before 1998.

TRI Data for Mercury and Mercury Compounds, 1988-1999

	1988	**1995**	**1998**	**1999**	**Change 1988-1999**	
	Number	Number	Number	Number	Number	Percent
Forms	52	34	35	46	-6	-11.5
	Pounds	Pounds	Pounds	Pounds	Pounds	Percent
On-site Releases	39,993	17,768	20,750	21,673	-18,320	-45.8
Off-site Releases (Transfers to Disposal)	276,634	221,325	35,579	60,121	-216,513	-78.3
Total On- and Off-site Releases	**316,627**	**239,093**	**56,329**	**81,794**	**-234,833**	**-74.2**

Polycyclic Aromatic Compounds

Introduction

Polycyclic aromatic compounds (PACs), also known as polycyclic aromatic hydrocarbons (PAHs), are a group of over 100 different chemicals that are characterized by hydrogen and carbon arranged in two or more fused benzene rings (EPA EA, 1999). PACs originate from both natural and anthropogenic sources. As pure chemicals, PACs generally exist as colorless, white, or pale yellow-green solids. Most PACs do not occur alone in the environment; rather, they are found as a mixture of two or more PACs. High concentrations of PACs are present in substances such as fuel oil, coal, coal tar pitch, creosote, and road and roofing tar. The TRI PACs category consists of 21 specifically listed compounds as listed in Box 3-4.

Box 3-4: Polycyclic Aromatic Compounds Category

CAS Number	Chemical Name
56-55-3	Benzo(a)anthracene
205-99-2	Benzo(b)fluoranthene
205-82-3	Benzo(j)fluoranthene
207-08-9	Benzo(k)fluoranthene
206-44-0	Benzo(j,k)fluorene
189-55-9	Benzo(r,s,t)pentaphene
218-01-9	Benzo(a)phenanthrene
50-32-8	Benzo(a)pyrene
226-36-8	Dibenzo(a,h)acridine
224-42-0	Dibenzo(a,j)acridine
53-70-3	Dibenzo(a,h)anthracene
194-59-2	7H-Dibenzo(c,g)carbazole
5385-75-1	Dibenzo(a,e)fluoranthene
192-65-4	Dibenzo(a,e)pyrene
189-64-0	Dibenzo(a,h)pyrene
191-30-0	Dibenzo(a,l)pyrene
57-97-6	7,12-Dimethylbenz(a)anthracene
193-39-5	Indeno[1,2,3-cd]pyrene
56-49-5	3-Methylcholanthrene
3697-24-3	5-Methylchrysene
5522-43-0	1-Nitropyrene

For the purpose of this report, these chemicals are profiled as a group. All of the above chemicals, with the exception of 3-methylcholanthrene and benzo(j,k)fluorene, were previously reported to TRI as part of a single PAC category. The previous TRI reporting thresholds for the PAC category were 25,000 pounds for manufacturing and processing and 10,000 pounds for otherwise use. As a result of the PBT chemicals rule, 3-methylcholanthrene and benzo(j,k)fluorene are also reportable to TRI and are included in the PACs category group. In addition, benzo(g,h,i)perylene (CAS 191-24-2) is another PAC, which was not previously TRI-reportable. This chemical is listed separately from the PAC category under the TRI modifications resulting from the PBT chemicals rule and will be discussed separately in this section. Benzo(g,h,i)perylene is listed and discussed separately since, unlike all the members of the PACs category which were added to TRI based on concerns for carcinogenicity, benzo(g,h,i)perylene was added based on concerns for ecotoxicity.

Benzo(g,h,i)perylene

Benzo(g,h,i)perylene (CAS 191-24-2) in its physical state appears as pale yellow-green crystals. It is a five-ring PAC that is a product of incomplete combustion. Benzo(g,h,i)perylene releases toxic fumes when heated. It reacts with NO and NO_2 to form nitro derivatives. It can be absorbed into the body by inhalation of its aerosol and through the skin (CDC, April 2002).

Sources and Uses

There are presently no known commercial uses for PACs. In the past, some PACs were produced in small quantities for research purposes or used in medicines or in the production of dyes, plastics, or pesticides (EPA EA, 1999). For example, dibenz(a,h)acridine was previously used as a dye for pharmaceuticals and medical products; however, the use was abandoned due to its carcinogenic nature

(EPA EA, 1999). Currently, most, if not all, PACs are byproducts of combustion or impurities and not created for use themselves.

PACs may be formed as byproducts of both human and natural activities. They are produced or emitted during thermal processes such as the incomplete combustion of organic compounds, pyrolysis, or the processing of fossil fuels, bitumens, or nonfossil fuels (EPA EA, 1999). Natural sources include forest fires and volcanoes. Internal combustion engines, industrial, commercial, and residential fuel combustion, power generation, cigarette smoke, open burning, and incineration generate anthropogenic emissions.

Residential wood combustion accounts for the largest amount of PAC air emissions. Other major sources include consumer product usage (e.g., cigarette smoke, wood smoke, grilled or charred meats, processed or pickled foods (ATSDR, September 1996), wildfires, prescribed burning, and vehicle emissions. Other industrial contributors are the aerospace industry, coke ovens (various activities), petroleum refining, and primary aluminum production.

Of the profiled PACs, benzo(a)pyrene is the best documented. Benzo(a)pyrene is a slightly odorous, pale yellow crystalline solid. Benzo(a)pyrene is a byproduct of combustion and is also found in creosote, which is a brown, heavy, oily liquid that comes from the high-temperature treatment of coal or wood. Creosote can also be extracted from the resin of the creosote bush. Coal-tar creosote is the most widely used wood preservative in the United States. Sources of lesser significance are cement, lime, silicon carbide, asphalt roofing manufacturing, the creosote and other wood-preserving plants, road surfacing, municipal wastewater effluent, and domestic creosote use (EPA EA, 1999).

Benzo(g,h,i)perylene

Benzo(g,h,i)perylene occurs naturally in crude oils and results from the incomplete combustion of organic matter. It has no known commercial use or production. Emissions typically result from petroleum refining, coal tar distillation, and the combustion of tobacco (EPA EA, 1999), wood, coal, oil, propane, gasoline, and diesel fuels (Spectrum Laboratories, Undated).

Chemical Characteristics

Persistence and Bioaccumulation

PACs have persistence half-life values in soil that range from 20 days to 13 years. All but a few have half-life values well in excess of 6 months. Half-life values in water range from 79 days to 44 years, and those in air range from 4 to 114 days. PACs have BCF values that range from 800 to 31,440, with 16 of the 21 chemicals in this category with BCF values greater than 5,000. (EPA, PBT Chemicals Final Rule, October, 1999).

Benzo(g,h,i)perylene

Benzo(g,h,i)perylene has persistence half-life values in soil of 173 days to 1.8 years and persistence half-life values in water of greater than 100 days. Benzo(g,h,i)perylene has a BCF value of 25,420. (EPA, PBT Chemicals Final Rule, October 1999).

Environmental Fate and Transport

PACs primarily enter the environment as air emissions, mostly as releases from volcanoes, forest fires, and burning coal; vehicle emissions; wastewater effluent; spills and leakages; rainwater runoff; and landfill contamination (ATSDR, September 1996).

PACs also enter the atmosphere via evaporation from soil or surface waters. Since PACs tend to have low vapor pressures, they bind to dust and other particulate matter in the atmosphere. PACs remain in the gas phase at temperatures above 150°C, but will rapidly condense onto particulate matter at lower temperatures. PACs can break down by reacting with sunlight and other chemicals in the atmosphere over a period of days to weeks. PACs in the atmosphere may be carried over distances by the wind, but are eventually deposited on the earth's surface via atmospheric deposition.

In addition to atmospheric deposition, PACs enter the soil system through wastewater effluents from coke and petroleum refining industries, spills and leakages, rainwater runoff, or from waste disposal sites (Karthikeyan, R. and Bhandari, A., 2001). Low water solubilities of PACs often result in their accumulation in soils and sediments. However, certain PACs can move through soil to contaminate groundwater. Microorganisms can break down PACs in soil after a period of weeks to months. Terrestrial organisms may take up PACs. Although PACs have high lipid solubilities, they tend not to bioaccumulate in vertebrates, primarily because they are rapidly and extensively metabolized.

PACs are widely distributed throughout aquatic ecosystems. PACs may enter aquatic environments via atmospheric deposition, runoff of polluted ground sources, accidental spills, and wastewater sources (ATSDR, September 1996). Because of their low water solubilities, PACs bind to particles in the water column and most eventually settle in bottom sediments. Microorganisms breakdown some PACs in aquatic environments. Aquatic organisms bioaccumulate PACs to varying degrees, depending on several factors such as the species and properties of the specific PAC.

Benzo(g,h,i)perylene

Benzo(g,h,i)perylene may be released to the environment through industrial effluents, municipal wastewater treatment facilities and waste incinerators. Benzo(g,h,i)perylene biodegrades slowly in the environment. Its half-life in aerobic soil is approximately 600 to 650 days (Spectrum Laboratories, December 2001). In the atmosphere, benzo(g,h,i)perylene binds to particulate matter and is eventually deposited on the surface of the earth. It may also be broken down by sunlight in the atmosphere (Spectrum Laboratories, December 2001). In aquatic environments, benzo(g,h,i)perylene separates from the water column and binds to bottom sediments or suspended solids. Benzo(g,h,i)perylene also has the potential to bioaccumulate in aquatic systems.

Health and Environmental Effects

Exposure to PACs has produced various toxic health effects in both humans and in animals. Cancer incidence as a result of PAC exposure is a health effect of great concern. The carcinogenicity, or ability of a substance to cause cancer, of individual PACs and PAC-containing mixtures has been well studied in experimental animals. While the carcinogenicity of PACs is better documented in laboratory animals, the few documented cases of occupational exposure to PACs have resulted in an increased incidence of cancer in exposed workers. PACs have caused lung, stomach, and skin cancer in laboratory animals. The site and the type of tumors are dependent on both the species and the route of administration (ATSDR, September 1996). In fact, EPA's Carcinogen Assessment Group has designated most of the PACs as potential carcinogens (HHS, January 2001). All of the members of the TRI PACs category were listed based on concerns for carcinogenicity.

Carcinogenic PACs have also been reported to suppress immune system function in rodents. These PACs are known as immunosuppressants. PACs that are highly carcinogenic in animals tend to also act as strong immunosuppressants, while PACs that are less carcinogenic tend to act as weaker immunosuppressants.

In laboratory experiments on animals, exposure to certain PACs has been shown to adversely affect both female and male reproductive systems and fetal development. Adverse effects include malformations, stillbirths, birth defects, lower body weights, immunosuppression, clastogenicity, and tumorigenicity. Note that effects of PACs on human reproduction and development have not been studied (Illinois Department of Public Health, January 2002).

Effects on genetic material have been repeatedly demonstrated for some PACs, using *in vivo* tests in rodents and *in vitro* tests using mammalian (including human) cell lines. Similar experiments have been conducted with prokaryotes, with similar

results. Other PACs, however, appear to have little or no effect on genetic material (Holoubek, I. et al, May 2000).

PACs have been shown to induce a number of additional toxic effects. Eye irritation, photophobia (abnormal sensitivity to light), and skin conditions such as dermatitis (inflammation of the skin) and keratosis (excessive growth of horny tissue of the skin) have been demonstrated in workers occupationally exposed to PACs. PACs may also adversely affect the respiratory system.

Benzo(g,h,i)perylene

In aquatic toxicity tests benzo(g.h.i)perylene was found to have toxicity values of 0.030 milligrams per liter (mg/L) for fish 96-hour LC_{50} (i.e., the concentration that is lethal to 50% of test organisms) and 0.0002 mg/L for fish chronic toxicity. Other tests found chronic toxicity values at similarly low concentrations for daphnids and algae. These toxicity test values for benzo(g,h,i)perylene indicate that it is toxic at relatively low concentrations and thus is highly toxic to aquatic organisms (EPA, PBT Chemicals Proposed Rule, January 1999).

Efforts to Reduce Pollution from the Chemical

Numerous approaches have been employed to reduce pollution and adverse human and environmental health effects from PACs. Treatment of water with chlorine or ozone may reduce the levels of PACs in drinking water.

EPA regulates PACs under RCRA, CERCLA, SDWA, and CWA. In addition, EPA has included some PACs on a list of priority hazardous chemicals subject to reporting requirements under the Superfund Amendments and Reauthorization Act (SARA) (U.S. Department of Health and Human Services, January 2001). As mentioned previously, most PACs were listed under TRI prior to the PBT chemicals rule, but at higher reporting thresholds.

The National Institute for Occupational Safety and Health (NIOSH) and the Occupational Saftey and Health Administration (OSHA) have developed some occupational exposure standards addressing, both directly and indirectly, PACs. NIOSH has set standards for specific PACs, while OSHA indirectly limits exposure to numerous PACs. OSHA also regulates PACs under the Hazard Communication Standard and as chemical hazards in laboratories (ATSDR, September 1996).

In addition, various single PACs are addressed on the state or regional level through projects such as the Great Lakes Binational Toxics Strategy, which addresses among other chemicals, benzo(a)anthracene, benzo(a)pyrene, and benzo(g,h,i)perylene (EPA, GLNPO, November 2001). Benzo(g,h,i)perylene is listed as a priority pollutant under the CWA and is also regulated under CERCLA.

2000 TRI DATA FOR POLYCYCLIC AROMATIC COMPOUNDS

On-site and Off-site Releases

As shown in Table 3-19, there were 3,550 TRI forms submitted for polycyclic aromatic compounds for 2000. On- and off-site releases for polycyclic aromatic compounds totaled 5.4 million pounds, with 5.2 million pounds of this reported as the chemical category of polycyclic aromatic compounds.

Off-site releases (transfers to disposal) were the largest type of release for both the chemical category polycyclic aromatic compounds and the chemical benzo(g,h,i)perylene. Off-site releases accounted for 58.1 percent of total releases or 3.1 million pounds (see Figure 3-7). The second largest release type was air emissions, which accounted for 35.5 percent or 1.9 million pounds. The next largest types of releases were on-site land releases to RCRA subtitle C landfills of 201,582 pounds, accounting for 3.7 percent, and other on-site land releases of 115,206 pounds or 2.1 percent. (Types of on-site land releases are described in Box 1-4 in Chapter 1.)

Much smaller amounts of the other types of releases were reported. Surface water discharges were

18,137 pounds, and underground injection of polycyclic aromatic compounds to Class II-V wells was 10,000 pounds.

Waste Management Data

Quantities of TRI Chemicals in Waste

Production-related waste of polycyclic aromatic compounds totaled 42.9 million pounds in 2000, as shown in Table 3-20. Over 90 percent was reported as the chemical category polycyclic aromatic compounds.

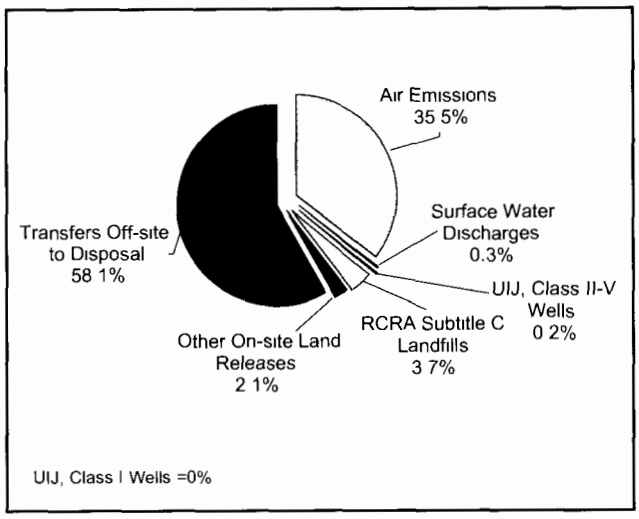
Almost 60 percent (25.6 million pounds) of the total production-related waste of polycyclic aromatic compounds was treated on-site in 2000 (see Figure 3-8). Energy recovery on-site accounted for 17.6 percent or 7.6 million pounds and releases on- and off-site site accounted for 13.4 percent, or 5.7 million pounds. Recycling on-site was 2.9 million pounds or 6.8 percent, and the other types of waste management accounted for about 2.5 percent of the total.

Transfers Off-site for Further Waste Management/Disposal

Transfers off-site for further waste management and disposal of polycyclic aromatic compounds totaled 4.4 million pounds in 2000 (see Table 3-21). Transfers of the chemical category polycyclic aromatic compounds accounted for 4.3 million pounds or 96.9 percent of the total.

Three-quarters of the transfers for further waste management and disposal of polycyclic aromatic compounds were transfers off-site to disposal (3.3 million pounds) (see Figure 3-9). Transfers to recycling accounted for 14.5 percent (640,243 pounds), transfers to treatment were 5.5 percent (245,100 pounds) and transfers to energy recovery were 4.8 percent (213,108 pounds). Other types of transfers were less than one percent of total transfers for further waste management and disposal of polycyclic aromatic compounds for 2000.

Figure 3-7: Distribution of TRI On-site and Off-site Releases, 2000: Polycyclic Aromatic Compounds



Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

UIJ=Underground Injection

TRI Data by State

Facilities in Massachusetts, with 253 forms, submitted the largest number of forms in 2000 for polycyclic aromatic compounds. Two other states, Texas and New York, also had more than 200 forms, with 226 forms from Texas and 206 forms from New York.

Table 3-19: TRI On-site and Off-site Releases, 2000: Polycyclic Aromatic Compounds

		On-site Releases							Off-site Releases	
				Underground Injection		On-site Land Releases				
CAS Number Chemical	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
	Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
191-24-2 Benzo(g,h,i)perylene	1,366	42,318 09	531 22	0 00	0 00	976 14	5,236.07	49,061 52	116,927.71	165,989 23
– Polycyclic aromatic compounds	2,184	1,874,118 34	17,605 83	0 00	10,000 00	200,605 50	109,969 93	2,212,299 59	3,024,686 82	5,236,986 40
Total	**3,550**	**1,916,436.42**	**18,137.05**	**0.00**	**10,000.00**	**201,581.64**	**115,205.99**	**2,261,361.11**	**3,141,614.53**	**5,402,975.63**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

Table 3-20: Quantities of TRI Chemicals in Waste Managed, 2000: Polycyclic Aromatic Compounds

CAS Number	Chemical	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-production-related Waste Managed Pounds
191-24-2	Benzo(g,h,i)perylene	100,105 08	9,925.22	1,804,355 26	5,656 33	1,451,368 24	2,665 42	167,216 09	3,541,291 65	639 53
--	Polycyclic aromatic compounds	2,832,753 89	612,917 31	5,765,790 55	206,486 66	24,149,013 88	254,599 44	5,576,975 70	39,398,537 42	64,077 54
	Total	**2,932,858.97**	**622,842.53**	**7,570,145.81**	**212,142.99**	**25,600,382.12**	**257,264.86**	**5,744,191.79**	**42,939,829.07**	**64,717.07**

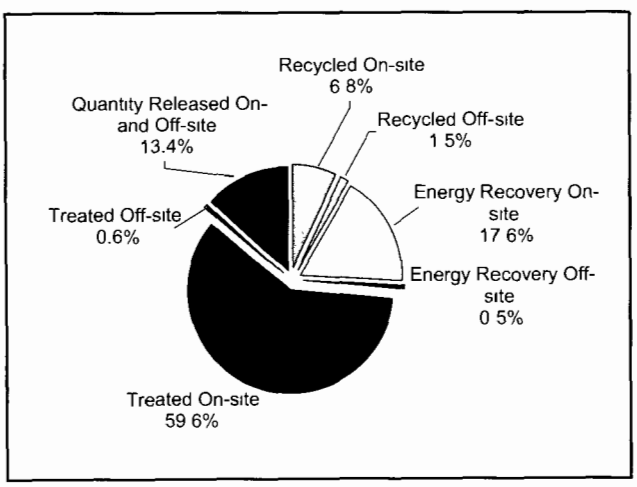
Note Data are from Section 8 of Form R

On- and Off-site Releases

In 2000, facilities in the state of Washington reported the largest total on- and off-site releases of polycyclic aromatic compounds (see Table 3-22). They reported a total of 1.8 million pounds, or one-third of the total releases of polycyclic aromatic compounds for 2000. Ohio accounted for 1.2 million pounds of releases, over 21 percent of the total. This was more than two and a half times the amount from facilities in West Virginia, which reported the third largest amount, with 463,102 pounds or 8.6 percent.

Almost all (94.5 percent or 1.7 million pounds) of Washington's releases of polycyclic aromatic compounds were as off-site releases (transfers to disposal). Ohio facilities reported the largest amount of air emissions of any state, with 775,614 pounds or 40.5 percent of total air emissions of polycyclic aromatic compounds. Air emissions represented two-thirds of total releases of polycyclic aromatic compounds in Ohio in 2000.

Figure 3-8: Quantities of TRI Chemicals in Waste, 2000; Polycyclic Aromatic Compounds



Note: Data are from Section 8 of Form R

As shown in Map 3-3, releases of polycyclic aromatic compounds are quite concentrated geographically. Two states, Washington and Ohio, released 3.0 million pounds of the 5.4 million-pound total (54.9 percent). Eight other states (West Virginia, Oregon, Louisiana, Massachusetts, Pennsylvania, North Carolina, South Carolina and Mississippi) released between 100,000 pounds and 500,000 pounds of polycyclic aromatic compounds in 2000.

Waste Management Data

Texas had the largest quantity of total production-related waste of polycyclic aromatic compounds of any state in 2000 (see Table 3-22). Texas facilities reported 7.7 million pounds of total production-related waste and accounted for 17.9 percent of total production-related waste of polycyclic aromatic compounds. Tennessee ranked second with 6.8 million pounds (15.9 percent of the total), and South Carolina was third with 5.2 million pounds (12.0 percent of the total).

Over 90 percent of production-related waste in Texas was treated on-site. The 6.9 million pounds of polycyclic aromatic compounds treated on-site in Texas accounted for 27.0 percent of all on-site treatment of polycyclic aromatic compounds in 2000.

For Tennessee, the largest component of production-related waste was on-site energy recovery, a total of 5.9 million pounds, representing 78.4 percent of the nation's total on-site energy recovery and 87.0 percent of Tennessee's production-related waste. South Carolina reported the largest amount recycled on-site, 752,000 pounds, which was 25.6 percent of

Table 3-21: TRI Transfers Off-site for Further Waste Management/Disposal, 2000: Polycyclic Aromatic Compounds

CAS Number	Chemical	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs: Metals and Metal Compounds Pounds	Transfers to POTWs: Non-metal TRI Chemicals Pounds	Other Off-site Transfers* Pounds	Other Off-site Transfers to Disposal** Pounds	Total Transfers for Further Waste Management/ Disposal Pounds
191-24-2	Benzo(g,h,i)perylene	9,812.57	5,780.04	2,661.48	0.00	615.74	19.50	116,945.31	135,834.63
--	Polycyclic aromatic compounds	630,430 47	207,328 38	242,467 35	0 00	4,498 19	125 00	3,199,851 36	4,284,700 75
	Total	**640,243.04**	**213,108.42**	**245,128.83**	**0.00**	**5,113.93**	**144.50**	**3,316,796.67**	**4,420,535.39**

Note: Total Transfers Off-site for Further Management/Disposal are from Section 6 of Form R

* Other Off-site Transfers are transfers reported without a valid waste management code
** Does not include transfers to POTWs of metals and metal compounds

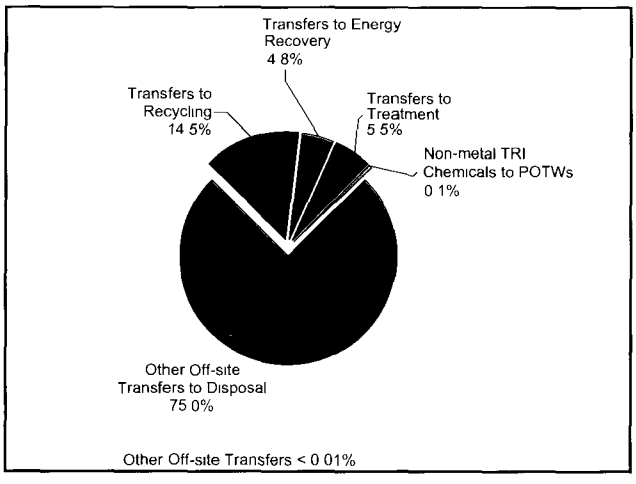
total on-site recycling of polycyclic aromatic compounds in 2000.

TRI Data by Industry (2-digit SIC Code)

On- and Off-site Releases

The primary metals industry reported the largest total releases of any industry sector, 3.1 million pounds or 58.3 percent of the total on- and off-site releases of polycyclic aromatic compounds in 2000 (see Table 3-23). The chemical manufacturing industry had the second largest total releases, with 468,461 pounds of total releases. Two other sectors, petroleum refining and hazardous waste/solvent recovery, had over 200,000 pounds of releases of polycyclic aromatic compounds in 2000.

Figure 3-9: Distribution of TRI Transfers Off-site for Further Waste Management/Disposal, 2000: Polycyclic Aromatic Compounds



Note Total Transfers Off-site for Further Management/Disposal *are from* Section 6 of Form R

Two-thirds of the releases of the primary metals industry, the sector with the largest releases, were off-site releases (transfers to disposal) and one-third was air emissions. The 2.1 million pounds of off-site releases from the primary metals industry accounted for 66.9 percent of the total for all industries, and the 1.0 million pounds of air emissions were 54.4 percent of total air emissions.

Over 84 percent of the chemical industry's total releases, the sector with the second largest releases, was off-site releases (transfers to disposal). The chemical industry reported 394,895 pounds of off-site releases. Petroleum refining, with the third largest releases, reported 308,752 pounds of total releases with over half (162,979 pounds or 52.7 percent) as air emissions.

Waste Management

The primary metals industry reported the largest amount of total production-related waste of polycyclic aromatic compounds in 2000 (see Table 3-23). With 17.6 million pounds of production-related waste, this industry sector accounted for 41.1 percent of all production-related waste.

Almost three-quarters (13.1 million pounds) of the production-related waste reported by the primary metals industry were treated on-site. The primary metals industry reported 3.3 million pounds released on- and off-site (18.6 percent of the production-related waste of polycyclic aromatic com-

Table 3-22: Summary of TRI Information by State, 2000: Polycyclic Aromatic Compounds

		On-site Releases							Off-site Releases	
				Underground Injection		On-site Land Releases				
State	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
	Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
Alabama	90	26,155.83	506 94	0 00	0.00	12,567 00	2,702.39	41,932.17	56,806.36	98,738 53
Alaska	10	0 35	20 00	0 00	0 00	0 00	26 00	46 35	0 00	46 35
Arizona	34	1,146.54	0.00	0 00	0 00	0.00	98.14	1,244.68	0.00	1,244 68
Arkansas	34	2,408 52	168 60	0 00	0 00	0 00	1,170 69	3,747 81	632 93	4,380 74
California	151	1,362.95	2,185.71	0.00	10,000.00	5,433.94	487.12	19,469.71	606 73	20,076 44
Colorado	34	391 41	68 10	0 00	0 00	0 00	0 00	459 51	145 80	605 31
Connecticut	146	32,097.30	0.00	0.00	0 00	0.00	37.70	32,135.00	409.50	32,544.50
Delaware	18	556 71	16 70	0 00	0 00	0 00	0 30	573 71	2 00	575 71
District of Columbia	3	0 36	0 00	0 00	0.00	0.00	0.00	0.36	0.00	0.36
Florida	131	15,919 63	69 56	0 00	0 00	0 00	246 76	16,235 95	149 28	16,385 23
Georgia	101	19,110.83	133.69	0.00	0 00	0.00	116 59	19,361.11	193.58	19,554.69
Guam	3	310 39	0 00	0 00	0 00	81 00	0 00	391 39	0 00	391 39
Hawaii	30	2,572.66	20 00	0 00	0.00	0 00	0.07	2,592.73	0.00	2,592.73
Idaho	4	64 70	27 80	0 00	0 00	0 00	58 00	150 50	0 00	150 50
Illinois	88	26,673.00	94 30	0.00	0.00	0.00	703.80	27,471.10	57,573.34	85,044.44
Indiana	77	9,923 73	82 00	0 00	0 00	0 00	222 00	10,227 73	8,831 01	19,058 74
Iowa	42	35,274.02	0.00	0.00	0.00	0 00	0.00	35,274.02	5,642.89	40,916.92
Kansas	37	717 08	19 90	0 00	0 00	0 00	355 90	1,092 88	49 68	1,142 56
Kentucky	46	56,304.39	35.20	0 00	0.00	56 40	55.30	56,451.29	3,685.61	60,136.90
Louisiana	84	98,910.02	1,934 59	0 00	0 00	280 00	707 20	101,831 81	68,673 89	170,505 71
Maine	92	60,163.48	97.17	0.00	0.00	0.00	590.00	60,850.65	322.30	61,172.95
Maryland	59	19,931 42	9,505 00	0 00	0 00	0 00	300 00	29,736 42	16,750 38	46,486 80
Massachusetts	253	100,143.60	678 99	0.00	0 00	0.00	0 37	100,822.96	40,812.66	141,635.61
Michigan	60	19,556 34	37 98	0 00	0 00	10,326 00	279 29	30,199 61	972 80	31,172 41
Minnesota	61	27,961.92	0 00	0 00	0.00	0 00	0.00	27,961.92	791 23	28,753.15
Mississippi	32	3,212 35	99 34	0 00	0 00	0 00	103 80	3,415 49	96,735 08	100,150 58
Missouri	63	6,008.19	0 30	0 00	0.00	0 00	0.00	6,008.49	1,433 80	7,442.29
Montana	17	37,634 67	9 90	0 00	0 00	0 00	526 28	38,170.85	8 69	38,179 54
Nebraska	11	16.59	0.00	0.00	0 00	0.00	0.00	16.59	78.39	94.98
Nevada	10	6 65	0 00	0 00	0 00	0 00	302 00	308 65	2,600 70	2,909 35
New Hampshire	40	898 27	311.32	0.00	0.00	0 00	18.10	1,227.69	346.25	1,573.94
New Jersey	116	1,517 29	59 56	0 00	0 00	426 00	0 00	2,002 85	615 59	2,618 44
New Mexico	18	58 83	0.00	0.00	0.00	0.00	0.00	58.83	3.30	62 13
New York	206	34,799 81	36 81	0 00	0 00	950 00	57 13	35,843 75	995 86	36,839 62
North Carolina	134	76,323.99	156.01	0 00	0.00	5.00	32,055.50	108,540.50	7,766 35	116,306.84
North Dakota	14	275 13	0 00	0 00	0 00	0 00	16 70	291 83	7 78	299 61
Northern Marianas	4	0.16	0.00	0.00	0 00	0.00	0.00	0.16	0.00	0.16
Ohio	154	775,614 50	149 11	0 00	0 00	0 00	49 90	775,813 51	388,592 22	1,164,405 73
Oklahoma	36	3,022.03	10.00	0.00	0 00	83 00	178.20	3,293.23	63,263 38	66,556.61
Oregon	41	56,474 66	75 40	0 00	0 00	170,300 30	3,064 70	229,915 06	52,327 10	282,242 16
Pennsylvania	186	46,583.32	393 19	0 00	0.00	0.00	35,565.70	82,542 21	53,700.57	136,242.78
Puerto Rico	37	21,912 88	150 60	0 00	0 00	0 00	0 00	22,063 48	1 80	22,065 28
Rhode Island	52	14,568.48	7.72	0 00	0 00	0.00	7.87	14,584.07	415.96	15,000.03
South Carolina	95	62,335 33	200 02	0 00	0 00	0 00	203 85	62,739 20	44,665 18	107,404 38
South Dakota	8	142.96	22.20	0.00	0.00	0 00	0.00	165.16	494 10	659.26
Tennessee	66	24,705 01	129 14	0 00	0 00	0.00	33,743 67	58,577 82	2,619 41	61,197 23
Texas	226	46,918 72	129 85	0 00	0.00	1,073.00	808.63	48,930.20	13,071.76	62,001 97
Utah	19	1,314 30	33 00	0 00	0 00	0 00	0 00	1,347 30	1,067 20	2,414 50
Vermont	14	891.22	0.00	0.00	0.00	0.00	0.00	891.22	0.00	891.22
Virgin Islands	8	2,600 02	2 00	0 00	0 00	0 00	0 00	2,602 02	0 00	2,602 02
Virginia	86	19,240 20	92 64	0.00	0.00	0.00	6.98	19,339.82	2,118 18	21,458 00
Washington	70	98,447 11	277 80	0 00	0 00	0 00	233 89	98,958 80	1,701,749 53	1,800,708 33
West Virginia	35	21,076 04	69 69	0 00	0 00	0.00	44.00	21,189.73	441,911.90	463,101.63
Wisconsin	55	661 78	18 04	0 00	0 00	0 00	61 47	741 29	1,840 29	2,581 57
Wyoming	9	1,518 76	1.18	0 00	0 00	0.00	0.00	1,519.94	132.18	1,652.12
Total	**3,550**	**1,916,436.42**	**18,137.05**	**0.00**	**10,000.00**	**201,581.64**	**115,205.99**	**2,261,361.11**	**3,141,614.53**	**5,402,975.63**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

Table 3-22: Summary of TRI Information by State, 2000: Polycyclic Aromatic Compounds (continued)

State	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site	Total Production-related Waste Managed	Non-production-related Waste Managed
	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Pounds	Pounds	Pounds
Alabama	259,900.20	48,153.00	0.00	1,430.00	40,248.00	8,212.60	98,507.23	456,451.03	3,463.80
Alaska	0 00	0 00	0 00	0 00	729 02	0 00	0 35	729 37	0 00
Arizona	0 00	0.00	0.00	0.00	461,255.20	0.00	1,245.68	462,500.88	0.00
Arkansas	315 00	4 40	329 30	8,026 00	673,972 60	231 40	3,627 69	686,506 39	11,365 50
California	0.12	555.09	1.10	0.10	9,483.00	1,622.77	10,773.00	22,435.18	451.30
Colorado	0 00	2,337 20	0 00	0 00	4,336 00	161 00	642 81	7,477 01	76 00
Connecticut	345.00	459.35	0.20	0.00	1,526,587.00	47.80	36,970 53	1,564,409.88	0.00
Delaware	0 00	64 00	905 37	0 00	1,700 00	0 00	214,638.30	217,307 67	0 00
District of Columbia	0.00	0.00	0.00	0.00	0.00	3.60	3 94	7.54	0.00
Florida	3,246 00	2,548 60	8,467 85	2,937 94	464 00	21 48	15,903.75	33,589 62	2 50
Georgia	10,129.00	7,482.40	82,297.00	0.50	332.00	80.60	19,731.06	120,052.56	0.00
Guam	0 00	0 00	0 00	0 00	0 00	81 00	369 39	450 39	22 00
Hawaii	0.00	0.00	0.00	40 03	0.00	0.00	2,593.14	2,633.17	0.00
Idaho	0 00	0 00	0 00	0 00	0 00	0 00	150 40	150 40	0 00
Illinois	2,883.00	4,707.02	5.00	82,672.00	17,634.00	15,317.58	86,064.05	209,282.65	1,573.14
Indiana	406,185 00	25,165 90	6,637 00	348 50	392,332 00	18 30	19,277 32	849,964 02	215 71
Iowa	28.00	6,167.00	3,619.00	433.90	0.00	5,243.00	35,514.02	51,004.92	0.00
Kansas	305 00	24 61	0 00	27 00	30 02	3.70	1,113 89	1,504 22	0 00
Kentucky	0.00	8,670.00	200,926.00	46 00	538,683.50	3,353.00	60,133.08	811,811.58	0 00
Louisiana	13,681 20	152,411 00	473,555 00	1,634 00	839,518 01	5,802 33	170,813 93	1,657,415 47	111 04
Maine	0.00	466.88	0.00	0.00	1.00	25.12	97,839.55	98,332.55	2.00
Maryland	20 20	3,892 13	276,668 10	0 00	2,011,460 20	1,224 40	21,089 53	2,314,354 56	26,002 50
Massachusetts	0.00	65.18	35,301.45	745.88	34,298.58	297.96	78,938.70	149,647.74	138.69
Michigan	0 00	6,980 64	1,191 90	274 89	1,842,917 00	84 89	31,073 61	1,882,522 93	0 00
Minnesota	3,223.00	2,144.00	38,999 00	1,435.96	20,086.02	290.15	24,255.34	90,433.47	2.10
Mississippi	416 88	1,738 00	0 00	1,156 80	4,722 00	7,391 20	100,169 32	115,594 20	3,422 30
Missouri	0.00	21,123.20	0.00	470.00	1,341 64	4.20	6,571.11	29,510 15	0.00
Montana	2,533 87	807 00	0 00	0 00	5 64	13 01	38,533 97	41,893 49	430 00
Nebraska	44.34	2,143.00	187.46	0.00	1,794.00	2.05	94.98	4,265.83	0.00
Nevada	0 20	1,900 00	0 00	0 00	0 00	0 50	2,903 25	4,803 95	0 00
New Hampshire	0.00	1.00	53,469.25	56.07	2,746.00	0.00	1,559.40	57,831.72	10.00
New Jersey	91 60	1,851 88	0 00	91 80	16,072.00	137 52	7,255 82	25,500 62	17 56
New Mexico	0.00	2,283 00	0.00	0.00	231,800.00	0.00	62.03	234,145 03	2.10
New York	61,368 00	6,496 47	5,613 60	31 18	373,041 98	5,076 67	39,137 65	490,765 55	878 00
North Carolina	28,986.16	9,624 86	7,278.72	80.30	482,276.60	239.40	85,300.46	613,786.50	2.04
North Dakota	0 00	0 00	0 00	0 00	62,480 00	0 00	303 15	62,783 15	0 00
Northern Marianas	0.00	0.00	0.00	0.00	0.00	0.00	0 16	0.16	0.00
Ohio	26,381 30	24,928 60	620 40	23,120 00	568,893 20	77,984 71	1,168,889 09	1,890,817 31	1 70
Oklahoma	61,163.00	44,355.60	79,335.00	1,042 40	0.00	138.00	146,607.87	332,641.87	262.20
Oregon	0 00	818 00	1,220 00	1,600 00	19,176 00	2,138.23	241,745 46	266,697 69	1 70
Pennsylvania	646,904 50	93,412.29	58,455.97	270.00	184,818.41	5,378.90	127,801.57	1,117,041.64	2,148 69
Puerto Rico	0.00	0 00	29,400 00	0 00	0 00	7 22	22,066.08	51,473 30	2 80
Rhode Island	0.50	439 05	9,686.01	0.00	0.00	3.30	14,569.65	24,698.51	7.95
South Carolina	751,998 00	54,485.67	22,993 00	0 00	4,179,422 20	48,370 15	107,301 41	5,164,570 43	0.00
South Dakota	0.00	0.00	0.00	0.00	59,460.00	1,164 50	658.96	61,283 46	0.00
Tennessee	86,920 08	11,642 67	5,932,348 38	426 00	726,384 97	2,605 90	61,234 00	6,821,562 00	0 00
Texas	418,449.60	44,939.20	88,832.21	73,465.00	6,915,315.39	57,497 91	67,761.91	7,666,261.22	14,072.95
Utah	2,720 00	0 00	0 00	0 00	5,870 88	145 20	2,528 85	11,264 93	0 00
Vermont	0.00	0.00	0.00	18.20	0.00	0.00	891.42	909.62	0.00
Virgin Islands	0 00	0 00	0 00	0 00	15 00	0 00	2,602 02	2,617 02	0 00
Virginia	41.23	3,682.64	0.00	3.00	3,093,825.50	4,497.00	20,957.33	3,123,006.70	0.00
Washington	135,059.00	1,968 00	130 70	0 02	240,195 60	2,218 30	1,970,195.41	2,349,767 03	30 80
West Virginia	9,520 00	2,616.00	10 89	10,259.52	7,930 33	0.00	471,447.10	501,783.84	0.00
Wisconsin	0 00	19,288 00	6 95	0 00	2,106 40	83 50	2,594 61	24,079 46	0 00
Wyoming	0.00	0.00	151,654.00	0.00	4,621 24	44.80	1,177.44	157,497.48	0.00
Total	**2,932,858.97**	**622,842.53**	**7,570,145.81**	**212,142.99**	**25,600,382.12**	**257,264.86**	**5,744,191.79**	**42,939,829.07**	**64,717.07**

Note: Data are from Section 8 and Form R

Map 3-3: Total On-site and Off-site Releases, 2000: Polycyclic Aromatic Compounds

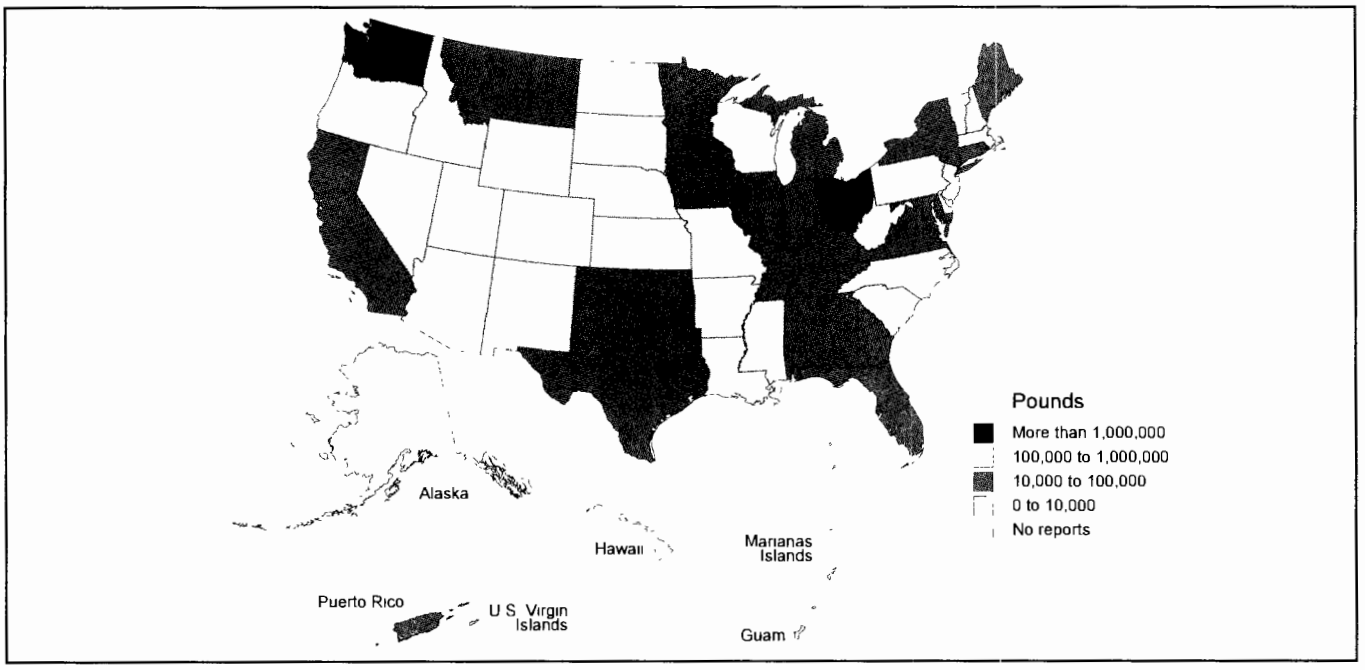


Table 3-23: Summary of TRI Information by Industry, 2000: Polycyclic Aromatic Compounds

			On-site Releases							Off-site Releases	
					Underground Injection		On-site Land Releases				
SIC Code	Industry	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
		Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
20	Food	239	189,420 77	1 00	0 00	0 00	0 00	0 00	189,421 77	18 00	189,439 77
22	Textiles	144	90,262 32	0 00	0 00	0 00	0 00	7 87	90,270 19	7 95	90,278 15
24	Lumber	75	4,301.47	2,546 20	0 00	0 00	0 00	0 80	6,848 48	104,069 82	110,918 30
25	Furniture	1	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
26	Paper	295	117,328 26	1,442 01	0 00	0.00	61 40	2,504 23	121,335.90	1,176 61	122,512 51
27	Printing	6	213 00	0 00	0 00	0 00	0 00	0 00	213 00	0 00	213 00
28	Chemicals	261	70,198 91	2,033 67	0 00	0 00	504 00	828 73	73,565 31	394,895.48	468,460 79
29	Petroleum	567	162,978 80	470 92	0 00	10,000 00	0 00	4,127 14	177,576 86	131,175 03	308,751 89
30	Plastics	116	24,409 03	0 00	0 00	0 00	0 00	0 00	24,409.03	171,501 20	195,910 23
31	Leather	8	19,000 10	0 00	0 00	0 00	0 00	0 00	19,000 10	0 00	19,000 10
32	Stone/Clay/Glass	27	1,624 33	0 00	0 00	0 00	0 00	49 00	1,673 33	648 68	2,322 01
33	Primary Metals	121	1,043,002 03	745 27	0 00	0 00	0 00	3,281 30	1,047,028 60	2,101,829 30	3,148,857 89
34	Fabricated Metals	40	12,520 81	0 00	0.00	0.00	0 00	0 00	12,520 81	87 00	12,607.81
35	Machinery	16	5,392 10	0 00	0 00	0 00	0 00	30 37	5,422 47	0 37	5,422 84
36	Electrical Equip.	67	54,548 52	116.62	0 00	0 00	0 00	38,443.34	93,108.48	34,753.48	127,861 96
37	Transportation Equip	69	8,710 08	0 00	0 00	0 00	0 00	335 00	9,045 08	312 00	9,357 08
38	Measure/Photo	27	11,393 03	1 70	0 00	0 00	0 00	0.01	11,394 73	1 00	11,395 73
39	Miscellaneous	17	1,213 04	0 00	0 00	0 00	0 00	0 00	1,213 04	118 10	1,331 14
	Multiple codes 20-39	137	63,460 55	266 24	0 00	0 00	0 00	1,066 46	64,793 25	34,380 61	99,173.86
	No codes 20-39	18	7,107 07	30 00	0 00	0 00	0 00	29 26	7,166 33	93 23	7,259 56
	Subtotal for Original Industries	**2,251**	**1,887,084.23**	**7,653.63**	**0.00**	**10,000.00**	**565.40**	**50,703.51**	**1,956,006.77**	**2,975,067.88**	**4,931,074.66**
10	Metal Mining	5	1,137 00	0 00	0 00	0 00	0 00	0 00	1,137 00	0 00	1,137 00
491/493	Electric Utilities	638	11,421 14	9,727 31	0.00	0 00	0 00	64,018 27	85,166 72	29,551 39	114,718 11
5169	Chemical Wholesale Distributors	2	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
5171	Petroleum Terminals/Bulk Storage	550	16,016 87	752 84	0 00	0 00	81 00	3 21	16,853 92	136,051 32	152,905 24
4953/7389	Hazardous Waste/Solvent Recovery	104	777 18	3 27	0 00	0 00	200,935 24	481 00	202,196 69	943 93	203,140 62
	Subtotal for New Industries	**1,299**	**29,352.19**	**10,483.42**	**0.00**	**0.00**	**201,016.24**	**64,502.48**	**305,354.33**	**166,546.64**	**471,900.98**
	Total	**3,550**	**1,916,436.42**	**18,137 05**	**0 00**	**10,000.00**	**201,581 64**	**115,205.99**	**2,261,361 11**	**3,141,614.53**	**5,402,975.63**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

pounds from the sector), and 1.2 million pounds recycled on-site (6.7 percent of the total reported by the primary metals industry).

Electric utilities had the second largest amount of production-related waste, with 8.5 million pounds or 19.9 percent of the total for polycyclic aromatic compounds in 2000, with most of it treated on-site.

The electrical equipment industry reported the third largest amount of total production-related waste, with 8.2 million pounds or 19.2 percent of total production-related waste of polycyclic aromatic compounds in 2000. This industry reported the largest amount of energy recovery on-site, 6.2 million pounds. On-site energy recovery by the electrical equipment industry accounted for 81.4 percent of all on-site energy recovery of polycyclic aromatic compounds in 2000.

Projected Quantities of TRI Chemicals Managed in Waste, 2000-2002

TRI facilities expected to decrease their production-related waste of polycyclic aromatic compounds between 2000 and 2001 by 9.6 percent, from 42.9 million pounds to 38.8 million pounds and another 2.6 percent from 2001 to 2002 (see Table 3-24). The decrease was projected to occur in the quantity released on- and off-site, a decrease of 41.8 percent from 2000 to 2002. On- and off-site releases are the least-desirable outcome under the waste management hierarchy described in **Waste Management** in Chapter 1 (Figure 1-2).

On-site energy recovery was also projected to decrease by 35.1 percent from 2000 to 2002. Recycling, both on- and off-site, was projected to increase. As a result, the quantity released on- and off-site was expected to decline as a percentage of total production-related waste from 13.4 percent in 2000 to 8.8 percent in 2002.

Table 3-23: Summary of TRI Information by Industry, 2000: Polycyclic Aromatic Compounds (continued)

		Recycled		Energy Recovery		Treated				
SIC Code	Industry	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-production-related Waste Managed Pounds
20	Food	3,199 00	808 50	310,151.40	2.50	90,175 63	18 00	402,677.02	807,032.05	18.96
22	Textiles	0 00	0 00	34,876 00	0 00	0 00	3 00	27,373 55	62,252 55	7 95
24	Lumber	349.60	11 00	34,700 00	6,563 80	35,037 10	129,789 80	116,765.85	323,217.15	20,316.90
25	Furniture	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
26	Paper	0 00	21 68	133,195 95	131.00	16,842.88	1,226 40	130,030 95	281,448 86	0 00
27	Printing	0 00	0 00	0 00	0 00	0 00	0 00	213 00	213 00	0 00
28	Chemicals	76,214.20	39,099.50	608,728 71	99,010 87	690,216 43	84,749 64	467,902.50	2,065,921.85	120.20
29	Petroleum	110,624 85	155,749 85	231,492 00	84,598 78	609,025 59	20,891 60	384,190 02	1,596,572 71	15,209 51
30	Plastics	857,798.34	139,117.97	0.00	2,510 60	23,005.00	522 96	199,264.70	1,222,219.58	110.00
31	Leather	0 00	0 00	963 25	0 00	0 00	0 00	54,200 10	55,163 35	0 00
32	Stone/Clay/Glass	0 00	0 00	6,637 00	52.88	19,815 08	0 00	2,320 77	28,825.73	0.00
33	Primary Metals	1,173,385 00	63,747 30	5,310 30	20 00	13,108,379 10	4,816 00	3,273,998 15	17,629,655 85	1,091 00
34	Fabricated Metals	0 00	0 00	637 00	0 00	0 00	0 00	12,644 62	13,281.62	0.00
35	Machinery	0 00	0 00	0 00	17 20	0 00	9 50	5,422 00	5,448 70	0 37
36	Electrical Equip	118,898.00	26,634 29	6,158,762 57	10,970 22	1,801,470.30	10,472.51	120,381 86	8,247,589.75	29.00
37	Transportation Equip	0 00	0 00	0 00	0 00	0 00	0 00	8,650 08	8,650 08	2 00
38	Measure/Photo	0.00	0.00	0 00	3.00	28 00	0 00	11,477.15	11,508 15	0.00
39	Miscellaneous	0 00	0 00	0 00	0 00	0 00	2,100 00	1,331 14	3,431 14	0 00
	Multiple codes 20-39	361,602.66	56,770 74	43,139 00	180 73	16,562.00	339.70	99,287.34	577,882.17	181.09
	No codes 20-39	230,000 00	127 35	0 00	0 00	72 00	0 00	7,230 61	237,429 96	58 00
	Subtotal Original Industries	**2,932,071.65**	**482,088.19**	**7,568,593.18**	**204,061.58**	**16,410,629.11**	**254,939.12**	**5,325,361.41**	**33,177,744.24**	**37,144.99**
10	Metal Mining	0 00	102 00	0 00	0 00	0 00	0 00	1,137 00	1,239 00	0 00
491/493	Electric Utilities	0 00	357 48	1,223 62	718 37	8,480,921.77	11.40	56,901.05	8,540,133 69	27,506.07
5169	Chemical Wholesale Distributors	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
5171	Petroleum Terminals/Bulk Storage	787.32	4,633.87	0 01	932.04	132.36	848 88	157,031.53	164,366.01	66 01
4953/7389	Hazardous Waste/Solvent Recovery	0 00	135,661 00	329 00	6,431 00	708,698 88	1,465 46	203,760 80	1,056,346 14	0 00
	Subtotal for New Industries	**787.32**	**140,754.35**	**1,552.63**	**8,081.41**	**9,189,753.01**	**2,325.74**	**418,830.38**	**9,762,084.84**	**27,572.08**
	Total	**2,932,858.97**	**622,842.53**	**7,570,145 81**	**212,142 99**	**25,600,382.12**	**257,264.86**	**5,744,191 79**	**42,939,829.07**	**64,717.07**

Note: Data are from Section 8 and Form R

Table 3-24: Current Year and Projected Quantities of TRI Chemicals in Waste, 2000: Polycyclic Aromatic Compounds

Waste Management Activity	Current Year 2000 Total Pounds	Current Year 2000 Percent of Total	Projected 2001 Total Pounds	Projected 2001 Percent of Total	Projected 2002 Total Pounds	Projected 2002 Percent of Total
Recycled On-site	2,932,858.97	6.8	3,090,394.08	8.0	3,152,185.19	8.3
Recycled Off-site	622,842.53	1 5	637,141 16	1 6	640,878 54	1 7
Energy Recovery On-site	7,570,145.81	17.6	6,550,729.66	16.9	4,909,766.03	13.0
Energy Recovery Off-site	212,142.99	0 5	199,826 51	0.5	199,148.48	0 5
Treated On-site	25,600,382.12	59.6	24,848,387.76	64.0	25,294,583.03	66.9
Treated Off-site	257,264.86	0 6	255,862.78	0.7	255,299 94	0 7
Quantity Released On- and Off-site	5,744,191.79	13.4	3,222,869.30	8.3	3,343,509.65	8.8
Total Production-related Waste Managed	**42,939,829.07**	**100.0**	**38,805,211.25**	**100.0**	**37,795,370.86**	**100.0**
Waste Management Activity	**Projected Change 2000-2001 Percent**		**Projected Change 2001-2002 Percent**		**Projected Change 2000-2002 Percent**	
Recycled On-site	5.4		2.0		7.5	
Recycled Off-site	2.3		0.6		2.9	
Energy Recovery On-site	-13.5		-25.1		-35.1	
Energy Recovery Off-site	-5.8		-0 3		-6.1	
Treated On-site	-2.9		1.8		-1.2	
Treated Off-site	-0 5		-0.2		-0 8	
Quantity Released On- and Off-site	-43.9		3.7		-41.8	
Total Production-related Waste Managed	**-9.6**		**-2.6**		**-12.0**	

Note: Current year and projected amounts are from Section 8 of Form R for 2000

Source Reduction

In 2000, 173 forms were filed reporting source reduction activities for polycyclic aromatic compounds (see Table 3-25). As noted in **Waste Management** in Chapter 1, source reduction—an activity that prevents the generation of waste—is the preferred waste management option. These 173 forms represented 4.9 percent of all forms submitted for polycyclic aromatic compounds in 2000.

The most frequently reported source reduction activity was good operating practices (listed on 94 forms). Spill and leak prevention came next, with 49 forms, followed by process modifications, with 45 forms.

Table 3-25: Number of Forms Reporting Source Reduction Activity, 2000: Polycyclic Aromatic Compounds

CAS Number	Chemical	Total Form Rs Number	Forms Reporting Source Reduction Activity Number	Forms Reporting Source Reduction Activity Percent of All Form Rs Percent	Category of Source Reduction Activity: Good Operating Practices Number	Inventory Control Number	Spill and Leak Prevention Number	Raw Materials Modifications Number	Process Modifications Number	Cleaning and Degreasing Number	Surface Preparation and Finishing Number	Product Modifications Number
191-24-2	Benzo(g,h,i)perylene	1,366	67	4.9	37	10	18	6	19	2	0	0
--	Polycyclic aromatic compounds	2,184	106	4 9	57	14	31	12	26	2	1	4
	Total	**3,550**	**173**	**4.9**	**94**	**24**	**49**	**18**	**45**	**4**	**1**	**4**

Note: All source reduction activities on a form are counted in the corresponding category Totals do not equal the sum of the categories because forms may report more than one source reduction activity

TRI Data for Polycyclic Aromatic Compounds Before 2000

Reporting for the chemical category polycyclic aromatic compounds before 2000 was based on the higher TRI thresholds of 25,000 pounds for manufacture or processing of the chemical and 10,000 pounds for otherwise using the chemical. For the reporting year 2000, these thresholds were reduced to 10 pounds for manufacture, processing or otherwise using polycyclic aromatic compounds.

Lowering the threshold, in effect, adds reports by those facilities whose activities were below the higher threshold. Consequently, the amounts for 2000 are not comparable with those for prior years. The chemical benzo(g,h,i)perylene was added to the TRI list for the 2000 reporting year so amounts for this chemical are not included here.

Box 3-5 has TRI data reported for polycyclic aromatic compounds before 2000.

Box 3-5: TRI Data Reported for Polycyclic Aromatic Compounds Before 2000

Following is a brief summary of releases and transfers and total production-related waste for chemical category polycyclic aromatic compounds for 1998 and 1999. This table includes reporting by both original and new industries.

TRI Data for Polycyclic Aromatic Compounds, 1998-1999

	1998	1999	Change 1998-1999	
	Number	Number	Number	Percent
Forms	270	286	16	5.9
	Pounds	Pounds	Pounds	Percent
On-site Releases	1,724,066	1,564,951	-159,115	-9.2
Off-site Releases (Transfers to Disposal)	1,552,059	2,079,317	527,258	34.0
Total On- and Off-site Releases	**3,276,125**	**3,644,268**	**368,143**	**11.2**
Total Production-related Waste Managed	**14,563,779**	**16,344,836**	**1,781,057**	**12.2**

The chemical category, polycyclic aromatic compounds, has been on the TRI chemical list since the 1995 reporting year. The following is a summary of releases and transfers and total production-related waste for 1995-1999. This table does not include reporting by new industries for 1998 and 1999 since new industries did not report to TRI before 1998.

TRI Data for Polycyclic Aromatic Compounds, 1995-1999

	1995	1998	1999	Change 1995-1999	
	Number	Number	Number	Number	Percent
Forms	162	191	201	39	24.1
	Pounds	Pounds	Pounds	Pounds	Percent
On-site Releases	497,692	1,607,138	1,337,714	840,022	168.8
Off-site Releases (Transfers to Disposal)	1,226,135	1,856,496	2,229,396	1,003,261	81.8
Total On- and Off-site Releases	**1,723,827**	**3,463,634**	**3,567,110**	**1,843,283**	**106.9**
Total Production-related Waste Managed	**16,418,453**	**14,333,965**	**15,466,171**	**-952,282**	**-5.8**

Polychlorinated Biphenyls (PCBs)

Introduction

Polychlorinated biphenyls (CAS 1336-36-3), otherwise known as PCBs, were first created in 1881, and commercial manufacture began in 1929. PCBs were commercially produced by the chlorination of a biphenyl with anhydrous chlorine using iron filings or ferric chloride as a catalyst. Domestic production of PCBs was banned in 1976 under the Toxic Substances Control Act (TSCA). PCBs were used in a wide range of applications (electrical transformers and capacitors, hydraulic systems, heat transfer systems, and carbonless copy paper, among others), owing to a rare combination of properties, including high dielectric constant (good insulator), low flammability, high heat capacity, low chemical reactivity, long-term resistance to degradation, and low acute toxicity. PCBs are a group of 209 halogenated aromatic hydrocarbons that were commercially used and sold as a mixture of isomers. PCBs may be either oily liquids or solids, with a color ranging from colorless to light yellow (EPA EA, 1999). Of the 209 possible PCBs, only about 100 individual isomers are likely to occur at significant concentrations in commercial PCB mixtures (EPA EA, 1999).

The primary U.S. producer was Monsanto Industrial Chemicals Company, which sold PCBs under the trade names "Aroclor" and "Askarel." Other PCB commercial trade names included Chlorextol, Dykanol, Inerteen, No-Famol, Pyranol, Kennechlor, Chlorphen, Fenclor, and Phenoclor (EPA EA, 1999). In the U.S., more than 1.25 billion pounds of PCBs were produced from 1930 to 1975.

Sources and Uses

Prior to 1976, PCBs were mostly used as a dielectric fluid in electrical equipment (e.g., transformers and capacitors). PCBs were used in high-voltage power capacitors for power factor correction in the distribution of electric power; in low-voltage power capacitors to improve the efficiency of lighting systems; and in small industrial capacitors for power factor improvement in equipment such as air conditioners, pumps, and fans. Additional PCB uses included hydraulic fluids and lubricants, plasticizers (materials incorporated into plastic to increase its workability and flexibility), heat transfer fluids (materials that absorb thermal energy from a source and deliver heat to a place of utilization), and investment castings (used as a filler for investment casting wax to decrease shrinkage of the ceramic mold). PCBs were also used as laminates in adhesive formulations involving polyurethanes and polycarbonates to prepare safety and acoustical glasses. PCBs have also been used in adhesive formulas in metals and ceramics to improve toughness and resistance to oxidative and thermal degradation during lamination. Due to PCBs' ability to resist photochemical degradation, oxidation, and fires, they were used as textile coating mixtures for ironing board covers and waterproof canvas (EPA EA, 1999). Other PCB uses include the following: paints, varnishes, electrical coatings, insulating tapes, protective lacquers, epoxy resins, sealing and caulking solutions, pressure-sensitive record and colored copying papers, floor tiles, brake linings, petroleum additives, soil erosion retardants, insecticides, bactericides, metal quenchers, gasket sealers, synthetic rubber, automobile body sealants, asphalt, plastic decorative articles, and lubricants in natural gas pipeline compressors.

Between 1929 and 1975 (EPA EA, 1999), closed electrical systems (e.g., capacitors and transformers) accounted for approximately 77% of industrial uses. Open-ended applications (e.g., plasticizers, carbonless copy paper, petroleum additives, and others) accounted for 15% of industrial uses. Finally, nominally closed systems (e.g., heat transfer fluids, hydraulic fluids, and lubricants) accounted for an additional 8% of industrial uses (EPA EA, 1999). Recent estimates suggested that 141,000 tons (282 million pounds) of PCBs were still in service

at the end of 1988, the last time a comprehensive inventory was conducted (EPA, GLNPO, October, 1998).

Chemical Characteristics

Persistence and Bioaccumulation

PCBs have persistence half-life values in soil that range from 1 to 7 years and half-life values in water that range from 56 to 98 days (EPA, PBT Chemicals Final Rule, October 1999).

PCBs have BCF values that range from 4,922 to 196,600 and BAF values of greater than 200,000. All of the PCBs, except 2,3,3',4,4',5,5' heptachlorobiphenyl (BCF 4,922) have BCF values far exceeding 5,000 (EPA, PBT Chemicals Final Rule, October 1999).

Environmental Fate and Transport

Even though PCBs are no longer produced in the U.S., PCBs may be released from the following sources:

- incineration of PCB-contaminated waste;
- redistribution of PCBs in soil and water to air;
- disposal sites containing transformers, capacitors, and other PCB-contaminated waste;
- the improper disposal of other PCB-contaminated materials (e.g., residues and debris from the shredding of automobiles, appliances, building demolition wastes, and fluorescent light ballasts); and
- the combustion of residual fuel oil (EPA EA, 1999).

PCBs have dispersed throughout the globe and are found in soils, surface waters, sediments, and air. PCBs primarily enter the atmosphere through emissions, but may also evaporate from soil and surface water. Once in the atmosphere, PCBs may travel long distances carried by the wind. Eventually, PCBs are returned to the earth's surface by atmospheric deposition.

Once PCBs reach the soil system, they bind strongly to particulate matter. PCBs deposited on soil and vegetation can also reach water bodies as a result of wash out by precipitation. The types of soils and land use influence the amount of leakage to freshwater. PCBs are highly persistent, although some microbial degradation may occur in soils. PCBs may be taken up from the soil and vegetation by terrestrial organisms and may bioaccumulate (ATSDR, February 2001).

PCBs enter aquatic environments primarily through atmospheric deposition. PCBs evaporate very slowly and are not very soluble in water. Therefore, PCBs tend to bind to organic particles and bottom sediments, although small amounts may remain dissolved (ATSDR, February 2001). Due to the presence of suspended particles in the water column to which PCBs have bound, the amount of PCBs in water bodies can sometimes exceed what would be expected from PCB water solubility. Water bodies act as a major transport mechanism for PCBs.

Health and Environmental Effects

The excellent properties of PCBs for industrial use also make them hazardous to environmental and human health. However, toxic effects are difficult to predict because of the complex nature of PCBs and the common mixture of other chemicals as impurities. Health effects from PCBs have been observed due to both chronic (long-term) and acute (short-term) exposure (EPA, ORD, September 1996).

Results from extensive animal studies clearly indicate the severe toxic effects of PCBs on animal health. Effects from exposure to PCBs have been observed on the immune system, reproductive system, central nervous system, and the endocrine system (EPA, OPPT, June 2001).

Both human and animal studies indicate the ability of PCBs to adversely affect the immune system. Animal studies have indicated a correlation between exposure to PCBs and decreased thymus gland size. The thymus gland produces lymphocytes, a type of blood cell, which promotes immunity and aids in

immune function. In addition, an increased susceptibility to the Epstein-Barr virus was observed in animals exposed to PCBs. Similarly, a human study found a link between individuals infected with Epstein-Barr virus and PCB exposure (EPA, OPPT, June 2001).

PCBs affect the reproductive system and development of offspring. Reproductive effects, such as decreased fertility, decreased conception, and prolonged menstruation, have been observed in laboratory experiments. PCB exposure was found to reduce the birth weight, conception rates, and live birth rates of Rhesus monkeys and several other animal species. Strong similarities between human and Rhesus monkeys suggest the ability of PCBs to affect the human reproductive system. Numerous human studies have confirmed PCBs' ability to affect the human reproductive system. Most of the studies examined children of mothers who were exposed to PCBs. Correlations between the level of PCB exposure and lower birth weights and shortened gestational age in humans have been established (EPA, OPPT, June 2001). In addition, a link between human exposure to PCBs through the consumption of contaminated fish and developmental effects were observed, such as motor deficits at birth, impaired psychomotor index, impaired visual recognition, and deficits in short-term memory in infants of mothers exposed to PCBs (EPA, OPPT, June 2001).

Evidence suggests a correlation between PCB exposure and cancer. PCB exposure was linked to liver and biliary tract cancer in humans, although these studies were inconclusive due to the lack of exposure quantification (ATSDR, February 2001). Another occupational study found a correlation between PCB exposure and increased melanoma rates (EPA, ORD, September 1996). However, other studies have found no increase in cancer rates following PCB exposure. The lack of consistent findings in studies of occupational PCB exposure indicates the need for additional studies. Experiments on animals have conclusively demonstrated carcinogenic effects, however. Oral exposure studies in animals show an increase in liver tumors in laboratory animals exposed to several commercial mixtures of PCBs and to several specific congeners (EPA, ORD, September 1996). EPA has classified all PCBs as probable human carcinogens (EPA EA, 1999). Similarly, HHS and the International Agency for Research on Cancer have concluded that PCBs may reasonably be anticipated to be carcinogens (ATSDR, February 2001).

Other health effects linked to PCB exposure include thyroid hormone level disruption and other endocrine system effects, skin and eye effects, and increased blood pressure (EPA, OPPT, June 2001).

Efforts to Reduce Pollution from the Chemical

In 1976, domestic PCB production was banned under TSCA, and in 1977 EPA initiated a PCB destruction and disposal program. In 1979, further restrictions to PCB use were implemented; all non-totally enclosed PCB activity was to be authorized by EPA. Examples of EPA-authorized activities included servicing PCB transformers and PCB-contaminated transformers; use in and servicing of railroad transformers and mine equipment; use in heat transfer systems, hydraulic systems, and natural gas pipeline compressors; servicing electromagnets; small quantities for research and development; and microscopy mounting medium (EPA EA, 1999). In addition, the following uses of PCBs were eliminated: transformers at food and feed facilities in 1985; transformers of 480 volts and above in 1990; and transformers below 480 volts in 1993.

PCB waste is presently required to be disposed in TSCA-approved chemical waste landfills (EPA EA, 1999). The finalized PCB disposal rule allows bulk waste to be disposed in RCRA Subtitle C landfills if the PCB concentration is less than 500 ppm.

In the early 1980s, EPA found that some synthetic organic chemicals (i.e., dyes and pigments) inadvertently generate PCBs during manufacturing. EPA

subsequently issued regulations under TSCA (40 CFR 761.3) that banned the sale of any products containing an annual average PCB concentration of 25 mg/kg or greater (50 mg/kg maximum concentration at any time). In addition, EPA required manufacturers and importers of products that inadvertently generate PCBs to report to EPA any process or import that produces or contains PCB concentrations greater than 2 mg/kg (EPA EA, 1999). PCBs were listed at a higher reporting threshold prior to the PBT chemical modifications to TRI reporting requirements.

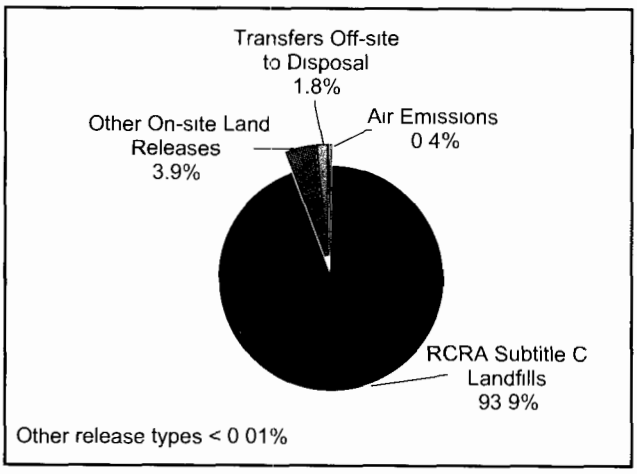
2000 TRI DATA FOR POLYCHLORINATED BIPHENYLS

On-site and Off-site Releases

As shown in Table 3-26, there were 171 TRI forms submitted for polychlorinated biphenyls for 2000. On- and off-site releases for polychlorinated biphenyls totaled 1.5 million pounds. On-site releases to land to RCRA subtitle C landfills were the largest type of release, accounting for 93.9 percent of total releases or 1.4 million pounds (see Figure 3-10). The second largest release type was other on-site land releases, which accounted for 3.9 percent or 57,544 pounds. (Types of on-site land releases are described in Box 1-4 in Chapter 1.)

Much smaller amounts of other types of releases were reported. Off-site releases (transfers to disposal) totaled 26,146 pounds; air emissions were 5,854 pounds; and releases to surface water and underground injection of polychlorinated biphenyls totaled less than 30 pounds.

Figure 3-10: Distribution of TRI On-site and Off-site Releases, 2000: Polychlorinated Biphenyls



Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

Waste Management Data

Quantities of TRI Chemicals in Waste

Production-related waste of polychlorinated biphenyls totaled 13.7 million pounds in 2000, as shown in Table 3-27. Most (11.9 million pounds or 87.0 percent) of the total production-related waste was treated on-site (see Figure 3-11).

Another 10.8 percent (1.5 million pounds) was released on- and off-site site. Treatment off-site was 288,786 pounds or 2.1 percent, and other types of waste management totaled less than 15,000 pounds.

Table 3-26: TRI On-site and Off-site Releases, 2000: Polychlorinated Biphenyls

		On-site Releases							Off-site Releases	
				Underground Injection		On-site Land Releases				
CAS Number Chemical	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
	Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
1336-36-3 Polychlorinated biphenyls (PCBs)	171	5,854 15	28 82	0 60	0 00	1,371,343 20	57,544 00	1,434,770 77	26,146 07	1,460,916 85

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

Table 3-27: Quantities of TRI Chemicals in Waste Managed, 2000: Polychlorinated Biphenyls

CAS Number Chemical	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site	Total Production-related Waste Managed	Non-production-related Waste Managed
	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Pounds	Pounds	Pounds
1336-36-3 Polychlorinated biphenyls (PCBs)	358.00	752.65	1,410.77	10,517 00	11,906,010 41	288,785.81	1,481,214 78	13,689,049 42	22,122 52

Note· Data are from Section 8 of Form R

Transfers Off-site for Further Waste Management/Disposal

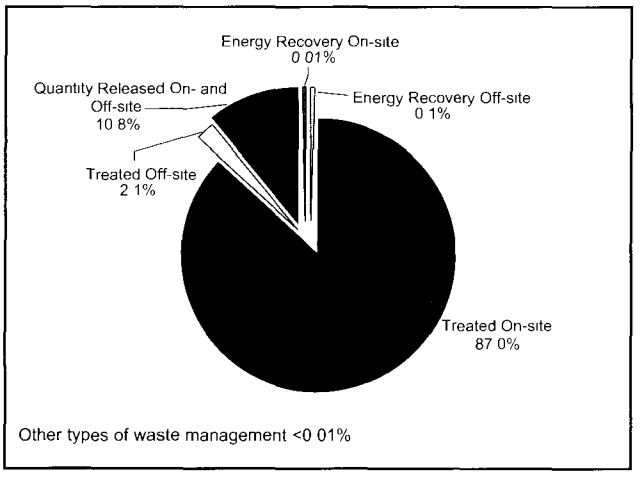
Transfers off-site for further waste management and disposal of polychlorinated biphenyls totaled 344,258 pounds in 2000 (see Table 3-28).

Transfers to treatment accounted for 82.0 percent of the transfers for further waste management and disposal of polychlorinated biphenyls in 2000 (see Figure 3-12). Transfers to treatment totaled 282,299 pounds. Other transfers to disposal were 50,352 pounds or 14.6 percent and transfers to energy recovery were 10,481 pounds or 3.0 percent of total transfers for further waste management and disposal of polychlorinated biphenyls for 2000. Other types of transfers were less than 1,200 pounds.

TRI Data by State

Facilities in Ohio submitted 12 forms, the largest number of forms in 2000 for polychlorinated biphenyls. North Carolina submitted 11 forms, had more than 10 forms, and three states submitted 9 forms: Massachusetts, New York and Texas.

Figure 3-11: Quantities of TRI Chemicals in Waste, 2000: Polychlorinated Biphenyls



Note: Data are from Section 8 of Form R

On- and Off-site Releases

In 2000, facilities in Alabama reported the largest total on- and off-site releases of polychlorinated biphenyls (see Table 3-29). They reported a total of 530,868 pounds, or 36.3 percent of the total for 2000. New York accounted for 499,719 pounds, which was 34.2 percent of the total. The states with the third and fourth largest amounts were Oregon, which reported 120,099 pounds or 8.2 percent of the total, and Michigan, which reported 117,871 pounds or 8.1 percent of the total.

Almost all (over 99.9 percent or 530,700 pounds) of Alabama's releases of polychlorinated biphenyls were on-site land releases to RCRA subtitle C landfills. The same was true for New York and Michigan. They reported more than 99 percent of their total releases as on-site land releases to RCRA subtitle C landfills (499,300 pounds and 117,619 pounds, respectively). Most of Oregon's total releases were also on-site land releases to RCRA subtitle C landfills, with 100,046 pounds or 83.3 percent of its total releases.

Facilities in Utah had the largest amount of other on-site land releases, with 28,594 pounds representing 49.7 percent of the total other on-site land releases for polychlorinated biphenyls in 2000. Massachusetts had the largest air emissions with 3,903 pounds, which were two-thirds of all air emissions of polychlorinated biphenyls. Oregon reported the largest amount of off-site releases (transfers to disposal), with 13,971 pounds or 53.4 percent of the total off-site releases from all states.

Table 3-28: TRI Transfers Off-site for Further Waste Management/Disposal, 2000: Polychlorinated Biphenyls

CAS Number	Chemical	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs: Metals and Metal Compounds Pounds	Transfers to POTWs: Non-metal TRI Chemicals Pounds	Other Off-site Transfers* Pounds	Other Off-site Transfers to Disposal** Pounds	Total Transfers for Further Waste Management/ Disposal Pounds
1336-36-3	Polychlorinated biphenyls (PCBs)	901.22	10,481 15	282,299 43	0 00	224 71	0 00	50,351 99	344,258 50

Note: Total Transfers Off-site for Further Management/Disposal are from Section 6 of Form R

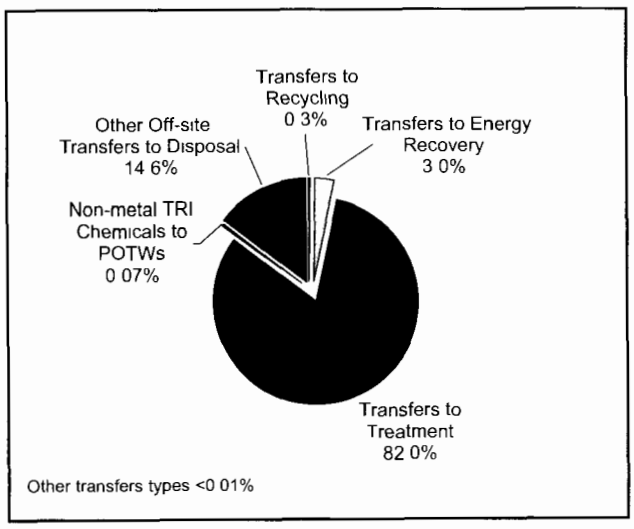
* Other Off-site Transfers are transfers reported without a valid waste management code
** Does not include transfers to POTWs of metals and metal compounds

As shown in Map 3-4, releases of polychlorinated biphenyls are quite concentrated geographically. Four states, Alabama, New York, Oregon and Michigan, released over 100,000 pounds. The total releases from these four states represented 86.8 percent of total releases of polychlorinated biphenyls in 2000.

Waste Management Data

Utah had the largest quantity of total production-related waste of polychlorinated biphenyls of any state in 2000 (see Table 3-29). Utah reported 9.7 million pounds of total production-related waste and accounted for 70.7 percent of the total. Texas ranked second with 2.3 million pounds (16.5 percent of the total).

Figure 3-12: Distribution of TRI Transfers Off-site for Further Waste Management/Disposal, 2000: Polychlorinated Biphenyls



Note. Total Transfers Off-site for Further Management/Disposal are from Section 6 of Form R

Over 99 percent of production-related waste in Utah and Texas was treated on-site. The 9.6 million pounds treated on-site in Utah accounted for 80.8 percent of all on-site treatment of polychlorinated biphenyls in 2000. Texas facilities reported 2.2 million pounds treated on-site, which was 18.8 percent of the total polychlorinated biphenyls treated on-site in 2000.

New York reported the third largest total production-related waste of polychlorinated biphenyls in 2000, with 618,767 pounds. Over 80 percent of its production-related waste was released on- and off-site. The 499,689 pounds of polychlorinated biphenyls released on- and off-site in New York accounted for 33.7 percent of the total quantity released on- and off-site in 2000.

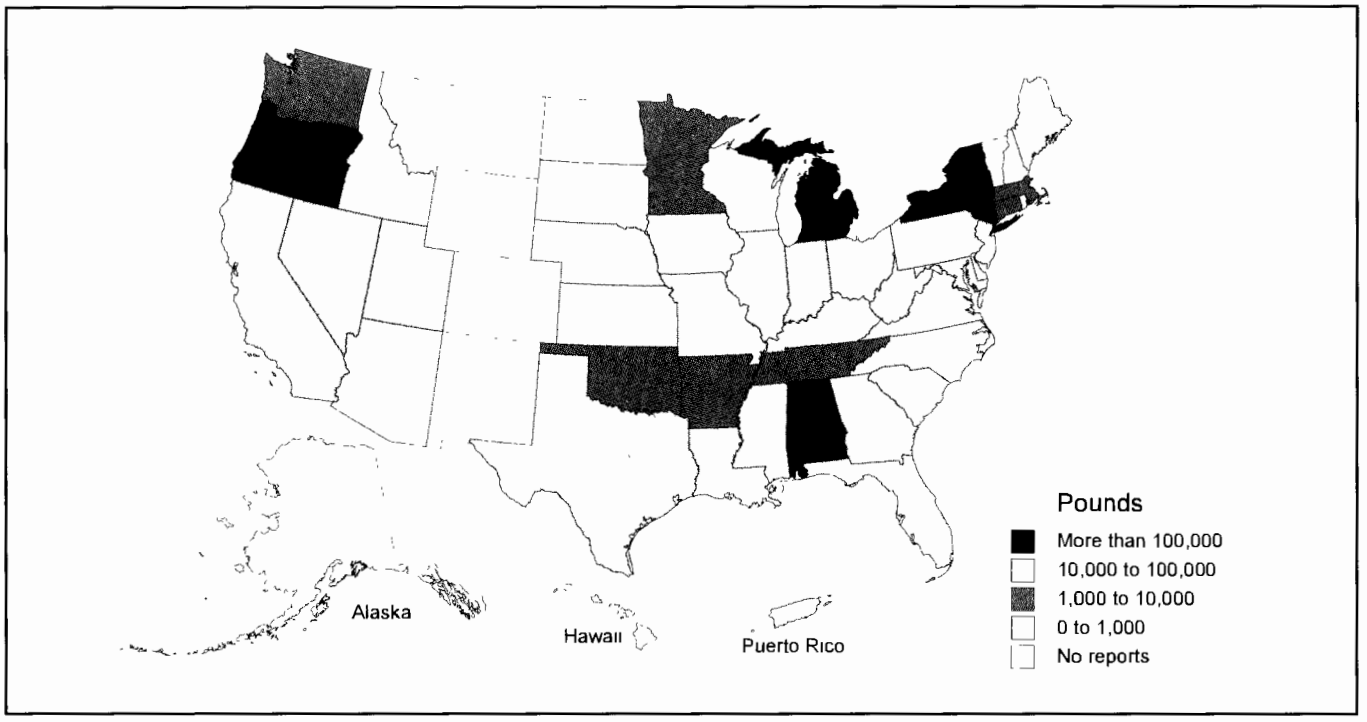
Alabama's releases on- and off-site totaled 541,325 pounds or 36.5 percent of the total quantity of polychlorinated biphenyls released on- and off-site in 2000.

TRI Data by Industry (2-digit SIC Code)

On- and Off-site Releases

The hazardous waste/solvent recovery industries reported the largest total releases of any industry sector, with 1.4 million pounds or 96.5 percent of the total releases on- and off-site of polychlorinated biphenyls in 2000 (see Table 3-30). The hazardous waste/solvent recovery industries also reported the largest amounts of on-site land releases, both releases to RCRA subtitle C landfills and other on-site land releases, with 1.37 million pounds to

Map 3-4: Total On- and Off-site Releases, 2000: Polychlorinated Biphenyls



RCRA subtitle C landfills and 34,708 pounds of other on-site land releases.

The industrial machinery industry had the second largest total releases, with 17,707 pounds of total releases, all of which were releases to other on-site land releases (that is, other than RCRA subtitle C landfills). The industrial machinery industry's other on-site land releases accounted for 30.8 percent of the total of such releases of polychlorinated biphenyls in 2000.

The plastics industry reported the third largest total releases and the largest off-site releases (transfers to disposal), with 13,971 pounds of total releases, all of which were as off-site release. The food industry reported the largest air emissions, with 3,406 pounds of total releases, all of which were as air emissions.

Waste Management

The hazardous waste/solvent recovery industries reported the largest amount of total production-related waste of polychlorinated biphenyls in 2000 (see Table 3-30). With 13.5 million pounds of production-related waste, the hazardous waste/solvent recovery industries accounted for 98.9 percent of all production-related waste of polychlorinated biphenyls. Almost 11.9 million pounds of polychlorinated biphenyls were treated on-site by the hazardous waste/solvent recovery industries. The 11.9 million pounds represented 87.8 percent of these industries' total production-related waste. The hazardous waste/solvent recovery industries also released on- and off-site 1.4 million pounds, which was 10.6 percent of its total production-related waste.

The chemical manufacturing industry reported the second largest amount of total production-related waste of polychlorinated biphenyls, with a total of 67,025 pounds. This was less than one percent of total production-related waste of polychlorinated biphenyls in 2000. About half (52.7 percent or 35,332 pounds) of the chemical industry's total production-related waste was treated off-site, about one-third (31.6 percent or 21,171 pounds) was treated on-site and 15.6 percent or 10,446 pounds were

Table 3-29: Summary of TRI Information by State, 2000: Polychlorinated Biphenyls

		On-site Releases							Off-site Releases	
				Underground Injection		On-site Land Releases				
State	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
	Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
Alabama	5	167 62	0.00	0 00	0.00	530,700.00	0.00	530,867.62	0.00	530,867.62
Arizona	1	0 00	0 00	0 00	0 00	0 00	0 00	0.00	0 00	0 00
Arkansas	3	0.00	0.00	0.00	0 00	0.00	3,168.00	3,168.00	0 00	3,168.00
California	7	0 57	0 00	0 00	0 00	27,912 00	3 00	27,915 57	76 00	27,991 57
Connecticut	4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2,700.00	2,700.00
Delaware	2	0 00	0 20	0 00	0 00	0 00	0 00	0 20	188 30	188 50
District of Columbia	1	0.00	0 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Florida	5	0.00	0.00	0 00	0 00	0.00	0 00	0.00	1 11	1.11
Georgia	7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Idaho	1	0 00	0 00	0 00	0.00	0 00	0 00	0 00	0 00	0 00
Illinois	5	276.00	0.00	0 00	0.00	0.00	0.00	276.00	0.00	276.00
Indiana	4	11.70	0 00	0 00	0 00	0 00	17,707 00	17,718 70	0 00	17,718 70
Iowa	3	0.00	0.00	0.00	0 00	0.00	0 00	0.00	412 00	412 00
Kansas	4	96 37	0 52	0 00	0.00	0 00	0 00	96 89	77 49	174 38
Kentucky	4	18.37	0.00	0 00	0.00	0.00	0.00	18.37	0.36	18.73
Louisiana	4	0.00	0 00	0 00	0 00	8 00	0 00	8 00	820 00	828 00
Maine	4	31.30	0 00	0.00	0.00	0.00	0 00	31.30	0 00	31.30
Maryland	2	0.00	0 00	0 00	0 00	0 00	0 00	0 00	275 00	275 00
Massachusetts	9	3,903.00	0.00	0.00	0.00	0.00	0.00	3,903.00	0.00	3,903.00
Michigan	5	55 00	0.00	0 00	0 00	117,619 00	0 00	117,674 00	197 00	117,871 00
Minnesota	3	78.15	0 00	0.00	0.00	0.00	0.00	78.15	1,454.00	1,532.15
Mississippi	1	0 00	0 00	0 00	0 00	0.00	175 40	175 40	0 00	175 40
Missouri	1	0.00	0.00	0.00	0.00	0.00	0 00	0.00	0.00	0.00
Nebraska	1	0 00	0.00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Nevada	1	0.00	0.00	0.00	0.00	66,420.00	0.00	66,420.00	0 00	66,420.00
New Jersey	5	0 49	2.63	0 00	0 00	15.00	0 00	18 12	9 10	27 22
New York	9	330.50	1.03	0.00	0 00	499,300.00	0 00	499,631.53	87.90	499,719.43
North Carolina	11	731 00	0.00	0 00	0 00	0 00	0 00	731 00	0.00	731 00
Ohio	12	0.00	0.00	0 00	0.00	0.00	17.30	17.30	130 00	147 30
Oklahoma	1	2 00	0 00	0 00	0 00	6,090 00	0 00	6,092 00	0 00	6,092 00
Oregon	3	0 00	0.00	0.00	0.00	100,046.20	6,082.30	106,128.50	13,970 57	120,099.07
Pennsylvania	6	107 45	0 00	0.00	0 00	33 00	28 00	168 45	162 33	330 78
Puerto Rico	2	16.60	0.00	0.00	0.00	0.00	0 00	16.60	0.00	16.60
Rhode Island	1	0.00	0.00	0 00	0 00	0 00	0.00	0 00	1 79	1 79
South Carolina	4	23.01	0.00	0.00	0.00	0 00	0.00	23.01	0 00	23 01
South Dakota	1	0 00	0 00	0 00	0 00	0.00	0 00	0 00	0 00	0 00
Tennessee	8	0.00	1.00	0.00	0.00	0.00	1,769.00	1,770.00	2,468 72	4,238.72
Texas	9	0 03	23 44	0.60	0 00	19,940.00	0 00	19,964 07	49 00	20,013 07
Utah	3	5.00	0.00	0.00	0.00	322.00	28,594.00	28,921.00	0.00	28,921.00
Virginia	1	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Washington	3	0.00	0.00	0.00	0.00	2,938.00	0.00	2,938.00	2,999.00	5,937.00
West Virginia	1	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Wisconsin	4	0.00	0.00	0.00	0.00	0.00	0.00	0 00	66.40	66.40
Total	**171**	**5,854.15**	**28.82**	**0.60**	**0.00**	**1,371,343.20**	**57,544.00**	**1,434,770.77**	**26,146.07**	**1,460,916.85**

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

released on- and off-site.

The industrial machinery industry reported the third largest amount of total production-related waste of polychlorinated biphenyls in 2000, with a total of 44,064 pounds, with 26,357 pounds (59.8 percent of its production-related waste) treated off-site and 17,707 pounds (40.2 percent) released on- and off-site.

Projected Quantities of TRI Chemicals Managed in Waste, 2000-2002

TRI facilities expected to decrease their production-related waste of polychlorinated biphenyls between 2000 and 2002 by 0.7 percent, from 13.7 million pounds to 13.6 million pounds (see Table 3-31). The decrease was projected to occur in the amount treated off-site, which was expected to decrease by 15.6

Table 3-29: Summary of TRI Information by State, 2000: Polychlorinated Biphenyls (continued)

State	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site	Total Production-related Waste Managed	Non-production-related Waste Managed
	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Pounds	Pounds	Pounds
Alabama	0.00	0 00	0.00	0.00	48.10	10,312.00	541,325.10	551,685.20	0.00
Arizona	0 00	0 00	0 00	20 00	0 00	12,024 00	0 00	12,044 00	0 00
Arkansas	0.00	0 00	0.00	10,477 00	1,334.00	6,422.50	0.00	18,233 50	3,168.00
California	358 00	17 35	0 00	3 00	0 00	2,472 47	36,074 67	38,925 49	0 00
Connecticut	0.00	141 00	0.00	0.00	22 58	3,150 00	0.00	3,313 58	0 00
Delaware	0 00	0 00	0 00	0 00	0 00	1,200 00	188 50	1,388 50	0 00
District of Columbia	0.00	0.00	0.00	0 00	0.00	66 00	66.00	132.00	0.00
Florida	0 00	0 10	0 57	0 00	0 00	0 00	0 00	0 67	1 11
Georgia	0 00	0 00	0 00	0 00	27 00	9,511 00	9,511.00	19,049.00	0 00
Idaho	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Illinois	0.00	0 00	0 00	0 00	164 00	692.00	276 81	1,132 81	0.00
Indiana	0 00	0 00	0 00	0 00	155 40	17,707 10	17,853 70	35,716 20	17,707 00
Iowa	0 00	23 20	0 00	0 00	15 00	0 00	412.00	450.20	278.00
Kansas	0 00	20 00	0 00	0 00	26,261 00	55,813 29	97 04	82,191 33	0 00
Kentucky	0.00	0.00	0.00	0 00	286 00	24 00	18.71	328.71	0.00
Louisiana	0 00	0 00	0 00	0 00	6,917 00	255 54	828 00	8,000 54	0 00
Maine	0 00	0 00	0 00	0.00	0.00	0.00	38.30	38.30	0.00
Maryland	0 00	0 00	0 00	0 00	64 00	275 00	0 00	339 00	0 00
Massachusetts	0.00	0.00	0.00	0.00	0.00	0.00	3,903 00	3,903.00	0.00
Michigan	0 00	0 00	0 00	0 00	113 00	1,810 01	117,871 20	119,794 21	0 00
Minnesota	0.00	0.00	0 00	0.00	0.00	65.00	1,537 45	1,602.45	0 00
Mississippi	0 00	0 00	0 00	0 00	0 00	0 00	175 40	175 40	0 00
Missouri	0.00	0.00	0.00	0.00	0.00	0 00	0 00	0.00	0 00
Nebraska	0 00	0 00	0 00	0 00	51 00	0 00	0 00	51 00	0 00
Nevada	0.00	493.00	0 00	0.00	0.00	311 00	66,419 00	67,223 00	0 00
New Jersey	0 00	0 00	0 00	0 00	70 00	14 00	41 10	125 10	0 00
New York	0.00	0.00	0.00	0 00	0.00	119,077.20	499,689.40	618,766 60	916.80
North Carolina	0 00	0 00	50 00	0 00	0 00	281 50	731 00	1,062 50	0 00
Ohio	0 00	0 00	0 00	0.00	653 00	2,084 00	147.70	2,884.70	0 00
Oklahoma	0 00	0 00	0 00	0.00	0 00	0 00	6,091 00	6,091 00	0 00
Oregon	0.00	0 00	0.00	0 00	0.00	6,047.00	106,124.00	112,171 00	0 00
Pennsylvania	0 00	0 00	1,333 00	0 00	279 00	4 00	301 70	1,917 70	0 00
Puerto Rico	0 00	0.00	0 00	17.00	0.00	0.00	16.60	33 60	0.00
Rhode Island	0 00	0 00	0 00	0 00	0 00	0 00	1 79	1 79	0 00
South Carolina	0.00	0 00	1 20	0.00	0.00	8,200.00	23.01	8,224.21	0 00
South Dakota	0 00	0 00	0 00	0 00	34 00	0 00	0 00	34 00	0 00
Tennessee	0.00	0.00	0.00	0 00	9,873 53	22,796.00	4,204 71	36,874.24	51 61
Texas	0 00	58 00	0 00	0 00	2,238,820 70	218 70	20,328 00	2,259,425 40	0 00
Utah	0 00	0.00	0 00	0 00	9,617,871.00	7,316 00	46,778 00	9,671,965.00	0.00
Virginia	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Washington	0 00	0 00	0.00	0 00	2,938 00	0 00	61 00	2,999 00	0.00
West Virginia	0 00	0 00	0 00	0 00	0 00	613 00	0 00	613 00	0 00
Wisconsin	0 00	0.00	26.00	0.00	13.10	23.50	79.90	142 50	0.00
Total	**358.00**	**752.65**	**1,410.77**	**10,517.00**	**11,906,010.41**	**288,785.81**	**1,481,214.78**	**13,689,049.42**	**22,122.52**

Note: Data are from Section 8 of Form R

percent. The quantity released on- and off-site was projected to decrease by 3.3 percent. On- and off-site releases are the least-desirable outcome under the waste management hierarchy described in **Waste Management** in Chapter 1 (Figure 1-2). The amount treated on-site, the largest component of total production-related waste, was projected to stay about the same.

The projected decrease of 0.7 percent was expected to occur primarily from 2000 to 2001, with a small decrease of 0.1 percent projected to take place from 2001 to 2002.

Source Reduction

In 2000, 8 forms were filed reporting source reduction activities for polychlorinated biphenyls (see Table 3-32). As noted in **Waste Management** in

Table 3-30: Summary of TRI Information by Industry, 2000: Polychlorinated Biphenyls

			On-site Releases							Off-site Releases	
					Underground Injection		On-site Land Releases				
SIC Code	Industry	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
		Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
20	Food	9	3,406.45	0 00	0 00	0 00	0 00	0.00	3,406.45	0 00	3,406 45
22	Textiles	6	1,281 00	0 00	0 00	0 00	0 00	0 00	1,281 00	0 00	1,281 00
24	Lumber	1	0 00	0 00	0 00	0.00	0 00	3,168 00	3,168 00	0 00	3,168 00
26	Paper	23	31 30	0 00	0 00	0 00	0 00	0 00	31 30	216 50	247 80
28	Chemicals	35	18 04	25.20	0 00	0 00	15 00	322 40	380 64	515.11	895.75
29	Petroleum	5	0 01	0 02	0 00	0 00	0 00	0 00	0 03	0 00	0 03
30	Plastics	1	0 00	0 00	0 00	0 00	0.00	0 00	0 00	13,970 57	13,970 57
32	Stone/Clay/Glass	2	0 00	0 00	0 00	0 00	0 00	23 00	23 00	1 33	24 33
33	Primary Metals	20	100.99	0.03	0 00	0 00	0 00	1,616 00	1,717 02	2,780 90	4,497 92
34	Fabricated Metals	1	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
35	Machinery	3	0 00	0 00	0 00	0 00	0 00	17,707 00	17,707 00	0 00	17,707.00
36	Electrical Equip	3	0 00	0 00	0 00	0 00	0 00	0 00	0 00	32 00	32 00
37	Transportation Equip.	1	0 00	0 00	0 00	0.00	0 00	0.00	0.00	0 00	0 00
38	Measure/Photo	1	0 00	0 00	0 00	0 00	0 00	0 00	0 00	2,700 00	2,700 00
39	Miscellaneous	1	0.00	0 00	0.00	0 00	0 00	0 00	0.00	0.00	0 00
	Multiple codes 20-39	6	0 00	1 00	0 00	0 00	0 00	0 00	1 00	2,445 61	2,446 61
	No codes 20-39	5	0 00	0 00	0.00	0 00	0 00	0 00	0 00	0.00	0 00
	Subtotal Original Industries	**123**	**4,837.79**	**26.25**	**0.00**	**0.00**	**15.00**	**22,836.40**	**27,715.44**	**22,662.02**	**50,377.46**
12	Coal Mining	1	0 00	0 00	0 00	0 00	0 00	17 30	17 30	0.00	17 30
491/493	Electric Utilities	20	689 01	0 00	0 00	0 00	0 00	0 00	689 01	33 11	722 12
4953/7389	Hazardous Waste/Solvent Recovery	27	327.36	2 57	0.60	0 00	1,371,328 20	34,690 30	1,406,349.03	3,450 94	1,409,799.97
	Subtotal for New Industries	**48**	**1,016.37**	**2 57**	**0.60**	**0 00**	**1,371,328.20**	**34,707.60**	**1,407,055.34**	**3,484 05**	**1,410,539.38**
	Total	**171**	**5,854.15**	**28.82**	**0.60**	**0.00**	**1,371,343.20**	**57,544.00**	**1,434,770.77**	**26,146.07**	**1,460,916.85**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

Chapter 1, source reduction—an activity that prevents the generation of waste—is the preferred waste management option. These 8 forms represented 4.7 percent of all forms submitted for polychlorinated biphenyls in 2000.

The most frequently reported source reduction activity was inventory control (listed on 3 forms). Other source reduction activities cited were good operating practices, spill and leak prevention and raw materials modifications, with 2 forms each.

Table 3-31: Current Year and Projected Quantities of TRI Chemicals in Waste, 2000: Polychlorinated Biphenyls

	Current Year 2000		Projected 2001		Projected 2002	
Waste Management Activity	Total Pounds	Percent of Total	Total Pounds	Percent of Total	Total Pounds	Percent of Total
Recycled On-site	358 00	0 0	370 00	0.0	380.00	0 0
Recycled Off-site	752 65	0 0	605 50	0 0	608 05	0 0
Energy Recovery On-site	1,410 77	0 0	1,478 10	0.0	1,548 10	0 0
Energy Recovery Off-site	10,517 00	0 1	10,447 00	0 1	10,447 00	0 1
Treated On-site	11,906,010 41	87 0	11,901,998.08	87 5	11,902,075 08	87 6
Treated Off-site	288,785 81	2 1	247,007 16	1 8	243,620 42	1 8
Quantity Released On- and Off-site	1,481,214.78	10 8	1,437,554 30	10 6	1,432,621 20	10.5
Total Production-related Waste Managed	**13,689,049.42**	**100 0**	**13,599,460.14**	**100.0**	**13,591,299 85**	**100.0**
Waste Management Activity	**Projected Change 2000-2001** Percent		**Projected Change 2001-2002** Percent		**Projected Change 2000-2002** Percent	
Recycled On-site	3 4		2 7		6.1	
Recycled Off-site	-19 6		0 4		-19 2	
Energy Recovery On-site	4 8		4.7		9.7	
Energy Recovery Off-site	-0 7		0 0		-0 7	
Treated On-site	0 0		0 0		0.0	
Treated Off-site	-14 5		-1 4		-15 6	
Quantity Released On- and Off-site	-2 9		-0 3		-3.3	
Total Production-related Waste Managed	**-0.7**		**-0.1**		**-0.7**	

Note: Current year and projected amounts are from Section 8 of Form R for 2000

Table 3-30: Summary of TRI Information by Industry, 2000: Polychlorinated Biphenyls (continued)

SIC Code	Industry	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-production-related Waste Managed Pounds
20	Food	0.00	0 00	0 00	0 00	0 00	0 00	3,406 85	3,406.85	0.00
22	Textiles	0 00	0 00	0 00	0 00	0 00	0 00	1,281 00	1,281 00	0 00
24	Lumber	0.00	0 00	0 00	0 00	0 00	0.00	0.00	0 00	3,168 00
26	Paper	0 00	0 00	26 00	0 00	0 00	80 70	256 50	363 20	0 00
28	Chemicals	0 00	58 00	0 00	17 00	21,171.28	35,332 34	10,446 30	67,024 92	1 00
29	Petroleum	358 00	0 00	0 00	0 00	21 00	68 20	0 03	447 23	0 00
30	Plastics	0.00	0.00	0.00	0 00	0 00	0.00	30 80	30 80	0 00
32	Stone/Clay/Glass	0 00	0 00	1,333 00	0 00	0 00	4 00	24 30	1,361 30	0 00
33	Primary Metals	0.00	141 00	0 00	0.00	266 10	3,944 00	12,794.98	17,146 08	278.00
34	Fabricated Metals	0 00	0 00	0 00	0 00	0 00	16 00	0 00	16 00	0 00
35	Machinery	0.00	0.00	0 00	0 00	0 00	26,357 00	17,707 00	44,064.00	17,707 00
36	Electrical Equip	0 00	20 00	0 00	20 00	0 00	12,148 00	0 00	12,188 00	0 00
37	Transportation Equip	0 00	0 00	0 00	0 00	0 00	240.00	0.00	240.00	0 00
38	Measure/Photo	0 00	0 00	0 00	0 00	0 00	2,700 00	0 00	2,700 00	0 00
39	Miscellaneous	0.00	23 20	0 00	0 00	0 00	0 00	0 00	23.20	0 00
	Multiple codes 20-39	0 00	0 00	0 00	0 00	5 03	196 00	2,671 00	2,872 03	51 61
	No codes 20-39	0 00	0 00	0 00	0 00	0.00	289 65	0.15	289.80	916 80
	Subtotal Original Industries	**358.00**	**242.20**	**1,359.00**	**37.00**	**21,463.41**	**81,375 89**	**48,618.91**	**153,454.41**	**22,122.41**
12	Coal Mining	0.00	0.00	0.00	0.00	0 00	0.00	17 30	17 30	0.00
491/493	Electric Utilities	0 00	0 10	51 77	0 00	116 00	66 00	788 01	1,021 88	0 11
4953/7389	Hazardous Waste/Solvent Recovery	0 00	510.35	0 00	10,480.00	11,884,431.00	207,343.92	1,431,790 57	13,534,555 84	0 00
	Subtotal New Industries	**0 00**	**510.45**	**51.77**	**10,480.00**	**11,884,547.00**	**207,409.92**	**1,432,595.88**	**13,535,595 02**	**0 11**
	Total	**358.00**	**752.65**	**1,410.77**	**10,517.00**	**11,906,010.41**	**288,785.81**	**1,481,214.78**	**13,689,049.42**	**22,122.52**

Note: Data are from Section 8 of Form R

Table 3-32: Number of Forms Reporting Source Reduction Activity, 2000: Polychlorinated Biphenyls

CAS Number Chemical	Total Form Rs Number	Forms Reporting Source Reduction Activity: Number	Forms Reporting Source Reduction Activity: Percent of All Form Rs Percent	Category of Source Reduction Activity: Good Operating Practices Number	Inventory Control Number	Spill and Leak Prevention Number	Raw Materials Modifications Number	Process Modifications Number	Cleaning and Degreasing Number	Surface Preparation and Finishing Number	Product Modifications Number
1336-36-3 Polychlorinated biphenyls (PCBs)	171	8	4.7	2	3	2	2	0	0	0	0

Note: All source reduction activities on a form are counted in the corresponding category Totals do not equal the sum of the categories because forms may report more than one source reduction activity

TRI Data for Polychlorinated Biphenyls Before 2000

Reporting for polychlorinated biphenyls before 2000 was based on the higher TRI thresholds of 25,000 pounds for manufacture or processing of the chemical and 10,000 pounds for otherwise using the chemical (see Box 3-6). For the reporting year 2000, these thresholds were reduced to 10 pounds for manufacture, processing or otherwise using polychlorinated biphenyls. Lowering the threshold, in effect, adds reports by those facilities whose activities were below the higher threshold. Consequently, the amounts for 2000 are not comparable with those for prior years. Box 3-6 has TRI data reported for polychlorinated biphenyls before 2000.

Box 3-6 has TRI data reported for polychlorinated biphenyls before 2000.

Box 3-6: TRI Data for Polychlorinated Biphenyls Before 2000

Following is a brief summary of releases and transfers and total production-related waste for polychlorinated biphenyls for 1998 and 1999. This table includes reporting by both original and new industries.

TRI Data for Polychlorinated Biphenyls, 1998-1999

	1998	1999	Change 1998-1999	
	Number	Number	Number	Percent
Forms	21	23	2	9.5
	Pounds	Pounds	Pounds	Percent
On-site Releases	3,742,838	10,165,009	6,422,171	171.6
Off-site Releases (Transfers to Disposal)	4,327	1,641	-2,686	-62.1
Total On- and Off-site Releases	**3,747,165**	**10,166,650**	**6,419,485**	**171.3**
Total Production-related Waste Managed	**12,903,465**	**19,444,912**	**6,541,447**	**50.7**

Polychlorinated biphenyls have been on the TRI chemical list since the beginning of TRI. The following is a summary of releases and transfers for 1988-1999. This table does not include reporting by new industries for 1998 and 1999 since new industries did not report to TRI before 1998.

TRI Data for Polychlorinated Biphenyls, 1988-1999

	1988	1995	1998	1999	Change 1988-1999	
	Number	Number	Number	Number	Number	Percent
Forms	120	9	7	8	-112	-93.3
	Pounds	Pounds	Pounds	Pounds	Pounds	Percent
On-site Releases	768	0	134,160	0	-768	-100.0
Off-site Releases (Transfers to Disposal)	410,996	34,432	1,203	11,406	-399,590	-97.2
Total On- and Off-site Releases	**411,764**	**34,432**	**135,363**	**11,406**	**-400,358**	**-97.2**

Pesticides

This section contains a discussion of the pesticides that have been classified as PBT chemicals: aldrin, chlordane, heptachlor, isodrin, methoxychlor, pendimethalin, toxaphene, and trifluralin.

ALDRIN

Introduction

Aldrin (CAS 309-00-2) is an organochlorine compound first introduced to the U.S. in 1950 as a cotton pesticide. Pure aldrin is a white powder with a mild chemical odor. The less pure commercial powders have a tan color (ASTDR, April 1993). Aldrin does not occur naturally in the environment. It was used as an insecticide from the 1950s to early 1970s on cotton and corn crops. In 1974, all uses except termite control were canceled under FIFRA, and production in the United States ceased. Aldrin has not been imported since 1985 due to health concerns and insect resistance (EPA EA, 1999).

Sources and Uses

Aldrin is created by condensing hexachlorocyclopentadiene (produced by the reaction of n-pentane and chlorine) with bicycloheptadiene (EPA EA, 1999). Aldrin was used as a soil insecticide to control root worms, beetles, and other crop pests, and as a treatment for timber, plastic and rubber coverings to control termites and other pests. Aldrin use peaked in 1966 at 19 millions pounds but had dropped to 10.5 million pounds by 1970. Because aldrin is not currently produced or imported into the U.S., its use is believed to be minimal.

Chemical Characteristics

Persistence and Bioaccumulation

Aldrin has persistence half-life values in soil of 291 days to 9 years, a persistence half-life value in water of 24 days, and persistence half-life values in air of 1 to 10 hours (EPA, PBT Chemicals Final Rule, October 1999).

Aldrin has a BCF value of 3,715 (EPA, PBT Chemicals Final Rule, October 1999).

Environmental Fate and Transport

In the past, aldrin entered the environment through pesticide application. Aldrin may also enter the environment from accidental spills or leaks from storage containers at waste sites. Once in the environment, aldrin breaks down to dieldrin, another insecticide with a similar structure. Aldrin may be converted to dieldrin by bacteria or sunlight (Spectrum Laboratories, Internet site, accessed December 2001). Aldrin is no longer produced or used in the U.S., and any past releases have likely been converted to dieldrin. Dieldrin is extremely persistent.

In the atmosphere, dieldrin binds to dust and may travel significant distances before being deposited back to the earth's surface. In the soil, aldrin and dieldrin bind strongly to particulate matter. Some aldrin and dieldrin evaporate from the soil surface and enter the atmosphere. Plants take up aldrin and dieldrin from the soil. Terrestrial organisms bioaccumulate these substances. If aldrin is ingested, it is quickly broken down to dieldrin. In aquatic environments, evaporation is significant. Dieldrin binds to bottom sediments and particulate matter in the water column. Aquatic organisms also significantly bioaccumulate aldrin and dieldrin (ATSDR, April 1993).

Health and Environmental Effects

Information on the heath effects of aldrin and dieldrin in humans is available from case reports of accidental or intentional poisonings and from studies of workers who were exposed to these chemicals either while manufacturing or applying them. The most commonly known and best documented effect of acute high-level exposure to aldrin or dieldrin is central nervous system excitation culminating in convulsions.

Aldrin and dieldrin mainly affect the central nervous system. Exposure to high levels of aldrin and dieldrin may result in convulsions and/or death (ATSDR, April 1993). Long-term exposure to moderate levels of aldrin or dieldrin may also cause convulsions, primarily because these substances bioaccumulate. Workers occupationally exposed to aldrin and dieldrin experienced health effects including nervous system effects, convulsions, headaches, dizziness, vomiting, irritability, and uncontrolled muscle movements (ATSDR, April 1993).

A few case reports have associated oral exposure to aldrin or dieldrin with liver and kidney toxicity and hemolytic anemia, but these effects were not observed in larger occupational studies, suggesting that these are likely to be rare. Animal studies have focused on oral exposure of aldrin or dieldrin. As with humans, these studies have shown that exposure to aldrin or dieldrin causes effects to the central nervous system, but these studies also exhibited additional effects, including liver and kidney toxicity, immunosuppression, fetal toxicity and increased postnatal mortality, neuro-developmental effects, and decreased reproductive function. Laboratory studies also indicate that aldrin and dieldrin may reduce the body's ability to resist infection (ATSDR, April 1993).

Occupational studies generally found no increase in cancer or deaths due to cancer resulting from aldrin and dieldrin exposure. EPA recognizes aldrin as a probable human carcinogen (ATSDR, April 1993). Although there is no conclusive evidence linking these compounds to cancer in humans, mice given large amounts did develop liver cancers (ASTSDR, September 2000).

Efforts to Reduce Pollution from the Chemical

In 1970, the U.S. Department of Agriculture (USDA) canceled all uses of aldrin based on the concern that this chemical could cause severe aquatic environmental change and is potentially carcinogenic. Early in 1971, EPA initiated cancellation proceedings for aldrin but did not order the suspension of aldrin use. In 1972, under the authority of FIFRA as amended by the Federal Pesticide Control Act of 1972, an EPA order lifted the cancellation of aldrin use in three cases: subsurface ground insertion for termite control; dipping of nonfood plant roots and tops; and moth-proofing in manufacturing processes using completely closed systems. In 1974, the registrant, Shell Chemical Company, voluntarily abandoned the latter two registered uses. Also in 1974, EPA issued a final decision canceling all uses of aldrin except those exempted in 1972. EPA was petitioned in 1987 to ban aldrin, and the final registered use of aldrin was voluntarily cancelled by Shell in 1987 (EPA EA, 1999). EPA defines aldrin and dieldrin as hazardous solid waste. Aldrin was listed in TRI at a higher reporting threshold prior to the PBT chemical modifications to TRI reporting requirements.

EPA has set allowable amounts of aldrin and dieldrin that can be present in water and seafood (ATSDR, April 1993). The FDA regulates the residues of aldrin and dieldrin and has set allowable levels in raw foods. In addition to regulatory controls, a number of states and local governments sponsor programs to encourage the proper disposal of banned and/or restricted pesticides, including aldrin.

CHLORDANE

Introduction

Chlordane (CAS 57-74-9) is a organochlorine compound used as a general pesticide. Pure chlordane is a white crystalline solid with a mild, pungent odor (EPA EA, 1999). It was first marketed in 1948 in a variety of formulations. Concern over the health effects and particularly the carcinogenicity of chlordane lead to an eventual ban on all domestic uses of chlordane in 1988.

Sources and Uses

Chlordane is produced by chlorinating cyclopentadiene to form hexachlorocyclopentadiene and condensing the latter cyclopentadiene to form chlordene. The addition of chlorine to a chlordene

intermediate yields chlordane and heptachlor (EPA EA, 1999). Technical grade chlordane contains a maximum of 7% heptachlor as well as a mixture of at least 140 related chemicals.

Chlordane was once widely used as an insecticide on corn, citrus, and home gardens and as a fumigant in termite and carpenter ant control. In 1978, a cancellation notice was issued that banned all uses of chlordane except for root dipping of non-food plants and underground treatment against termites. The minor use allowance of chlordane treatment on non-food plants was canceled in 1983, and the subterranean use of chlordane for termite control was banned in 1988.

Chemical Characteristics

Persistence and Bioaccumulation

Chlordane has persistence half-life values in soil of 0.4 to 8 years, a persistence half-life value in water of 239 days, and persistence half-life value in air of 12 hours to 5 days (EPA, PBT Chemicals Final Rule, October 1999).

Chlordane has a BCF value of 11,050 and BAF values of greater than 6,000,000 (EPA, PBT Chemicals Final Rule, October 1999).

Environmental Fate and Transport

Chlordane has been released to the environment primarily from its application as a pesticide, but it may also enter the environment at waste disposal sites (Spectrum Laboratories, December 2001). Chlordane persists in the environment for many years and is still found in air, water, and soil.

If released to the atmosphere, chlordane exists primarily as a vapor. It breaks down by reacting with light and with various chemicals in the atmosphere. However, its persistence in the atmosphere is long enough to allow it to travel significant distances before it is deposited on land or water (Spectrum Laboratories, December 2001).

In soil, it binds to particulate matter and is unlikely to enter groundwater. It is very persistent and may remain in the soil for over 20 years (ATSDR, September 1995). Chlordane is lost from soil by evaporation. In water, chlordane binds strongly to sediment and particulate matter in the water column. Some chlordane is lost from the water column by evaporation (Spectrum Laboratories, December 2001). It is extremely persistent in aquatic environments, and bioaccumulates in both aquatic and terrestrial organisms.

Health and Environmental Effects

Chlordane is an insecticide that was used to treat field crops and as a soil treatment to kill termites. Chlordane is of high concern because it causes adverse effects to human health and has been found in breast milk and adipose tissue and is persistent in all environmental media. Chlordane persists in soil which may lead to dermal exposure to humans or oral exposure from eating foods from contaminated soils. Human exposure has occurred from ingesting contaminated drinking water or fish from contaminated waters. Inhalation exposure to chlordane has occurred in areas (e.g., homes) treated with chlordane. Acute exposure to chlordane in humans causes gastrointestinal upset and neurological effects such as tremors and convulsions. In extreme cases chlordane exposure has caused death preceded by convulsions. In animal studies, neurological effects have consistently been recorded confirming chlordane as a neurotoxicant. Animal studies showed increased mortality rates of offspring that received substantial amounts of chlordane residues from their mothers' milk. (ATSDR, May 1994).

Human studies of accidental exposure and animal studies conducted under laboratory conditions indicate the high degree of chlordane's toxicity. Chlordane exposure has been linked to health effects on the nervous system, digestive system, and liver. Effects have included headaches, irritation, confusion, weakness, vision problems, upset stomach, vomiting, stomach cramps, diarrhea, and jaundice. Exposure may also induce convulsions and death (ATSDR, September 1995). An occupational study in Japan found minor changes in liver function in workers who used chlordane as a pesticide. Data is insufficient to determine chlordane's carcinogenicity for humans. However, laboratory

experiments have demonstrated a link between long-term exposure to low levels of chlordane and increased cancer rates in mice.

Efforts to Reduce Pollution from the Chemical

As described above, EPA banned all uses of chlordane because of concerns about chlordane's effects on human and environmental health. Chlordane was listed in TRI at a higher reporting threshold prior to the PBT chemical modifications to TRI reporting requirements. Other programs such as the Great Lakes Binational Toxics Strategy (BNTS) have been implemented to eliminate and reduce use of 37 chemicals, including chlordane (Council of Great Lakes Industries, December 2001). Also, a number of states and local governments sponsor programs to encourage the proper disposal of banned and/or restricted pesticides, including chlordane.

HEPTACHLOR

Introduction

Heptachlor (CAS 76-44-8) is an organochlorine insecticide, which was first isolated from technical chlordane in 1946. Technical heptachlor is a mixture of pure heptachlor and many related chemicals. Heptachlor does not occur naturally in the environment. It is a white powder that smells like mothballs.

Sources and Uses

Heptachlor is produced by the chlorination of chlordane. Technical heptachlor contains 20 percent chlordane. Heptachlor was first registered in the U.S. in 1952 for use as a general insecticide on a wide range of agricultural crops. Heptachlor was also used for home and garden insect control, for termite control, and as a seed treatment (EPA EA, 1999). In 1974, EPA issued a Notice of Intent to Cancel all registered uses of heptachlor except those for subterranean termite control and dipping of non-food plants. In March 1978, most other uses of heptachlor were canceled. Its use is now severely restricted and is presently only used in the U.S. to control fire ants in buried, pad-mounted electric power transformers and in underground cable television and telephone cable boxes (EPA EA, 1999).

Chemical Characteristics

Persistence and Bioaccumulation

Heptachlor has persistence half-life values in soil of 8 days to 4 years, persistence half-life values in water of 23.1 to 129.4 hours, and persistence half-life values in air of 1 to 10.5 hours (EPA, PBT Chemicals Final Rule, October 1999).

Heptachlor has a BCF value of 19,953 (EPA, PBT Chemicals Final Rule, October 1999).

Environmental Fate and Transport

Heptachlor is released to the environment from its use in the control of fire ants in power transformers and was also released during previous pesticide use. Heptachlor also enters the environment from waste disposal sites. When heptachlor enters the environment, it is changed by bacteria into a more toxic substance, heptachlor epoxide, and into other less toxic substances. In the atmosphere, both heptachlor and heptachlor epoxide can travel significant distances in the wind and may then be deposited to land and water. In the soil system, heptachlor binds strongly to soil particles and evaporates slowly into the atmosphere. It is very persistent. Heptachlor may be taken up by plants, and bioaccumulates in terrestrial organisms, which also convert heptachlor to heptachlor epoxide in their bodies (ATSDR, April 1993). In aquatic environments, heptachlor binds to particulate matter. Heptachlor has a low water solubility, while heptachlor epoxide dissolves more easily in water. Heptachlor is also very persistent in aquatic environments. Heptachlor bioaccumulates in aquatic organisms; they also convert heptachlor to heptachlor epoxide in their bodies (ATSDR, April 1993).

Health and Environmental Effects

Exposure to heptachlor and heptachlor epoxide occurs mostly from eating contaminated foods and milk, or through skin contact with contaminated soils. At high levels, heptachlor can cause damage to the nervous system. Heptachlor has been found in at least 129 of 1,300 National Priorities List sites identified by EPA (ATSDR, April 1993).

Heptachlor and heptachlor epoxide are toxic to humans and animals. There are some human data on brief exposures to high levels of heptachlor. People who accidentally swallowed pesticides containing heptachlor, or who spilled pesticides on their clothes, were reported to have become dizzy, confused, or have convulsions (ATSDR, April 1993).

Heptachlor can be absorbed through the skin, lungs, and gastrointestinal tract. A majority of the health effects of this pesticide comes from studies on rodents. Some of the observed effects were aggravated central nervous system, disrupted nerve transmission and enzyme production, infertility and/or abnormal offspring development, decreased postnatal survival, and liver damage (EXTOXNET, September 1993 and ATSDR, April 1993).

These studies showed that the consumption of very high levels of heptachlor for short periods produced serious liver problems. Longer-term exposure lead to damaged livers of rats and the livers and adrenal glands of mice. Animals that consumed heptachlor before and/or during pregnancy were found to have smaller litters or were unable to reproduce. Some of the offspring had cataracts and some died soon after birth (ATSDR, April 1993).

These adverse effects on animals due to exposure to heptachlor indicate that the liver and nervous system could be a target for humans as well. Animal studies have also shown that acute oral exposure of heptachlor caused 40% and 100% mortality rates in mice and rats respectively. Intermediate and chronic inhalation exposure of humans to heptachlor, either through occupational exposure or use of termiticides in homes, has been associated with leukemia and aplastic and hemolytic anemias. Further, animal studies have shown that oral heptachlor exposure causes statistically significant increases in white blood cell counts in rats (ATSDR, April 1993).

Symptoms of exposure observed in laboratory animals include lethargy, in-coordination, tremors, convulsions, stomach cramps and pain, and coma (EXTOXNET, September 1993). EPA has classified heptachlor (and heptachlor epoxide) as probable human carcinogens. Heptachlor is also toxic to aquatic life, but its toxicity varies highly from species to species.

Efforts to Reduce Pollution from the Chemical

The phase-out of heptachlor use began in 1978. In 1988, EPA canceled all uses of heptachlor in the U.S. except for fire ant control in power transformers. Note that heptachlor is still available outside the United States. Heptachlor was listed in TRI at a higher reporting threshold prior to the PBT chemical modifications to TRI reporting requirements. In addition to regulatory restrictions, a number of states and local governments sponsor programs to encourage the proper disposal of banned and/or restricted pesticides, including heptachlor (EXTOXNET, September 1993).

ISODRIN

Introduction

Isodrin (CAS 465-73-6) is an insecticide which is no longer used or manufactured in the U.S. Isodrin is a white crystalline solid (ECDIN). Isodrin is made by the slow reaction of cyclopentadiene with the condensation product of vinyl chloride and hexachlorocyclopentadiene.

Sources and Uses

Isodrin, a solid chlorinated hydrocarbon, has a melting point of 465 degrees Fahrenheit, but it is unstable and may react with light or acids. In soil it may undergo oxidation by microbes and be converted to endrin. It is not combustible, but can be decomposed at high temperatures for the production of noxious gases (e.g. chlorine, other chlorinated hydrocarbons) (EPA, EA, 1999).

Chemical Characteristics

Persistence and Bioaccumulation

Isodrin has persistence half-life values in soil of 180 days to 5 years and persistence half-life values in air of 1 to 10 hours (EPA, PBT Chemicals Final Rule, October 1999).

Isodrin has a BCF value of 20,180 (EPA, PBT Chemicals Final Rule, October 1999).

Environmental Fate and Transport

Release of isodrin to the environment is not expected to be significant since isodrin is no longer used in the U.S. If released to soil, isodrin may be converted to endrin. Endrin is a similar toxic substance, which may also be used as a pesticide (ATSDR, September 1997). If released to air, isodrin can bind to airborne particulate matter and may then be deposited (Spectrum Laboratories, December 2001). In soil systems, isodrin binds to soil particles. Based on experimental data, the half-life of isodrin in soil has been estimated to range from 0.5 years to a maximum of 5 years. If released to water, isodrin may bioaccumulate in aquatic organisms, bind to suspended solids and sediments, evaporate and undergo slow transformation, possibly to endrin.

Health and Environmental Effects

Isodrin can be absorbed by inhalation, ingestion or skin absorption. Isodrin may absorb onto the surface of dust particles, which may be swallowed as well as inhaled (Colorado Department of Health and Environment, April 4th, 2002). Case reports of insecticide manufacturing workers show that exposure to isodrin can result in convulsions, sometimes without premonitory symptoms. Convulsive episodes may alternate with periods of severe central nervous depression. Death from respiratory arrest may occur during coma, which commonly outlasts the convulsive phase and may persist for a few days. In animals, isodrin was more toxic than most organochlorines when exposed to chick embryos. Isodrin is related to the pesticide aldrin but was shown to be at least twice as toxic in laboratory rodents. If released to water, isodrin may bioconcentrate in aquatic organisms, adsorb to suspended solids and sediments, and undergo very slow microbial transformation, possibly to endrin (NIH, TOXNET, January 2002).

Limited studies of isodrin's effects on health exist because it is no longer commercially used. Many theories of isodrin's health effects come from observations of other organochlorine pesticides. Organochlorines, including isodrin, are convulsants causing excitation of the central nervous system (CNS). Symptoms of CNS toxicity include nausea, vomiting, seizures, dizziness, headache, tremors, elevated blood pressure, fever, rapid heart beat, coma and altered behavior (EPA, CEPP, Undated). Exposure can also cause skin effects and liver and kidney damage.

Efforts to Reduce Pollution from the Chemical

Prior to the PBT chemical modifications to TRI reporting requirements, isodrin was listed in TRI at a higher reporting threshold. Isodrin is also regulated under CERCLA (EPA, CEPP, Undated).

METHOXYCHLOR

Introduction

Methoxychlor (CAS 72-43-5) is an organochlorine used as a general insecticide. It is a pale-yellow powder with a slightly fruity or musty odor. However, it is available in many forms, including powders, emulsifiable concentrates, granules, and an aerosol. Methoxychlor is similar in structure to dichlorodiphenyltrichloroethane (DDT), but it is less toxic.

Sources and Uses

Methoxychlor is produced by reacting the chemical anisole with chloral, in the presence of an aluminum chloride catalyst. Methoxychlor is used on agricultural crops, livestock, grain storage, home gardens, and pets. EPA has approved the use of methoxychlor as a pesticide and fumigant on more than 85 crops such as fruits, vegetables, forage crops, and shade trees. It may also be applied to large areas such as beaches, estuaries, and marshes for control of flies and mosquito larvae and may be used for spray treatment of barns, grain bins, mushroom houses, other agricultural premises, and garbage and sewage areas (EPA EA, 1999).

Chemical Characteristics

Persistence and Bioaccumulation

Methoxychlor has persistence half-life values in soil of 81 to 136 days, persistence half-life values in water of 5 to 15.2 days, and persistence half-life values in air of 1 to 12 hours (EPA, PBT Chemicals Final Rule, October 1999).

Methoxychlor has a BCF value of 8,128 (EPA, PBT Chemicals Final Rule, October 1999).

Environmental Fate and Transport

Releases are expected to be the result of its use as a pesticide, and also due to losses during manufacturing, formulation, packaging, and disposal. In the atmosphere, sunlight may slowly break down methoxychlor. It does not evaporate into the atmosphere. In soil systems, microscopic organisms and sunlight may slowly break down methoxychlor. It binds to soil particles and is very persistent. In aquatic environments, methoxychlor binds to particulate matter because it has a low water solubility. Sunlight and microscopic organisms may break down methoxychlor within days (EPA, OW, February 2002). Methoxychlor bioaccumulates in aquatic species such as algae, bacteria, snails, clams, and some fish.

Health and Environmental Effects

According to HHS' ATSDR, no reports are available that relate adverse human health effects to methoxychlor exposure. The effects of methoxychlor have been primarily seen in animal studies through oral exposure. High doses of methoxychlor exposure cause neurological effects such as tremors and convulsions, but most studies indicate that the reproductive system is the most sensitive target for methoxychlor exposure.

In laboratory animals, exposure to high levels of methoxychlor has produced seizures, as well as changes in liver, kidney, intestines, heart muscle, mammary glands, and reproductive organs (EPA, OAQPS, May 2001). Reproductive and developmental effects observed in laboratory animals include abortions, reduced fertility for both males and females, reduced litter size, and skeletal effects (EPA, OAQPS, May 2001). Although there are no data that report adverse effects on the reproductive systems of humans, *in vitro* studies show that human liver microsomes can metabolize methoxychlor to estrogenic compounds. Therefore, methoxychlor could cause reproductive estrogen-like effects in humans if exposure levels were in the right range (ATSDR, September 1995).

In rats, a slight increase in liver cancer was observed in lab experiments, but there is inconclusive evidence regarding human carcinogenicity.

Efforts to Reduce Pollution from the Chemical

Numerous efforts to reduce pollution from methoxychlor have been implemented. EPA restricts the amount of methoxychlor that may be released to the environment during burning or by disposal in landfills. EPA requires that spills or accidental releases of methoxychlor to the environment of one pound or more must be reported. Methoxychlor was listed in TRI at a higher reporting threshold prior to the PBT chemical modifications to TRI reporting requirements.

Under the Safe Drinking Water Act, EPA has developed guidelines for methoxychlor concentration in drinking water. EPA has also set limits of 1–100 ppm on the amount of methoxychlor that may be present in crops, fruit, vegetables, grains, meats, milk, and food for livestock. The FDA limits the amount of methoxychlor in bottled water to 0.1 ppm (ATSDR, September 1995).

PENDIMETHALIN

Introduction

Pendimethalin (CAS 40487-42-1) is used as an insecticide and herbicide. It is also known as benzenamine. Pendimethalin was first registered as a pesticide in 1972 and marketed in 1976 (EPA EA, 1999). Pendimethalin is a orange-yellow crystalline solid and is formulated in liquid, solid, and granular forms, and also as an emulsifiable concentrate.

Sources and Uses

Pendimethalin is produced by the reaction of N-(1-ethylpropyl)amine with 2,6-dinitro-3,4-dimethylchlorobenzene, which is obtained by nitrating p-chloro-o-xylene in the presence of sulfuric acid. It is also produced by reacting o-xylene with diethyl ketone in the presence of nitric or sulphuric acid (EPA EA, 1999).

Pendimethalin is used as a pre-emergence and post-emergence herbicide on cotton, dry bulbs, onions, dry bulb shallots, edible beans, corn, legumes, garlic, grain, nonbearing fruit, nut crops, peanuts, potatoes, rice, soybeans, sugar cane, sunflowers, sweet corn, and sweet lupine (EPA EA, 1999). It is also used for pre-emergence control of many annual grasses and certain broadleaf weeds (EPA EA, 1999). Pendimethalin is applied by broadcasting, directed spray, and soil treatment. Fifty eight pendimethalin products are registered for agricultural, domestic, and commercial uses (EPA EA, 1999).

Chemical Characteristics

Persistence and Bioaccumulation

Pendimethalin has persistence half-life values in soil of 54 to 1,300 days and persistence half-life values in air of 2 to 21 hours (EPA, PBT Chemicals Final Rule, October 1999).

Pendimethalin has a BCF value of 1,944 (EPA, PBT Chemicals Final Rule, October 1999).

Environmental Fate and Transport

Pendimethalin may enter the environment from pesticide application and disposal sites. Pendimethalin is persistent, with a half-life of approximately 54 to 1,300 days. Pendimethalin may evaporate from soil and enter the atmosphere. In soil systems, pendimethalin binds to soil particles. Microbes do not degrade pendimethalin significantly, except under anaerobic conditions. Plants may absorb pendimethalin (EXTOXNET, June 1996). Pendimethalin has a low water solubility, and thus binds to sediments in aquatic environments. It may be broken down by sunlight.

Health and Environmental Effects

Animal studies assessing the effects of pendimethalin show that it has a low acute toxicity. It is slightly toxic if exposed by oral and eye routes, and is practically non-toxic by dermal and inhalation routes. However, despite its relatively low toxicity, pendimethalin has been shown to cause thyroid follicular cell adenomas in rats, and has been classified as a possible human carcinogen. In terms of its ecotoxicity, pendimethalin binds to and is essentially immobile from soil. Therefore, pendimethalin's potential to contaminate water bodies is relatively low. Pendimethalin may cause adverse effects in terrestrial and semi-aquatic plants and invertebrates, but at relatively low levels of risk (U.S. EPA, R.E.D. Facts, June 1997). Some studies have shown pendimethalin to be highly toxic to coldwater fish, highly to moderately toxic to warm-water fish, and highly to moderately toxic to freshwater invertebrates (NIH, TOXNET, January 2002).

Laboratory experiments indicate that pendimethalin exposure produces chronic and reproductive effects at elevated levels of exposure. Long-term studies in mice and rats have not found a conclusive correlation between exposure and increased cancer rates (WHO, 1993). Chronic exposure to pendimethalin has resulted in increased liver weights in laboratory animals (EXTOXNET, June 1996). Pendimethalin is slightly toxic to birds, and is highly toxic to fish and aquatic invertebrates.

Efforts to Reduce Pollution from the Chemical

EPA's Office of Pesticide Programs (OPP) requires hazardous substances to bear a signal word on product labels to reflect the toxicity of the product and/or the chemicals in the product. There are four toxicity classes that are based on acute oral, acute dermal, acute inhalation, and skin and eye irritation studies. Products and chemicals that fall under Toxicity Category I (very toxic) have to bear the word "DANGER" on their label, those in Toxicity Category II (somewhat toxic) have "WARNING" on their labels, and those in Toxicity Category III or IV (least or not-toxic) have the word "CAUTION" on

their labels. Pendimethalin is in EPA Toxicity Category III. Products containing pendimethalin must bear the Signal Word "Caution" or "Warning," depending on the formulation. Under the CWA, allowable levels of pendimethalin in wastewater are determined in conjunction with the National Pollutant Discharge Elimination System (NPDES) (Pesticide Management Education Program, March 1985). Pendimethalin was listed in TRI at a higher reporting threshold prior to the PBT chemical modifications to TRI reporting requirements.

TOXAPHENE

Introduction

Toxaphene (CAS 8001-35-2) is a polychlorinated camphene, which was widely used as an insecticide in the U.S. until 1990. Toxaphene is a man-made mixture containing more than 670 chemicals. It is a yellow or amber, waxy solid that smells like turpentine.

Sources and Uses

Technical toxaphene can be produced commercially by reacting chlorine gas with technical camphene in the presence of ultraviolet radiation and catalysts, yielding chlorinated camphene containing 67-69 percent chlorine by weight. It has been available in various forms: as a solid, solution, wettable powder, dusts, granules, and emulsifiable concentrates (EPA EA, 1999).

Toxaphene is an insecticide that was primarily used in the southern U.S. to control pests on cotton, vegetables, livestock and poultry, soybeans, and alfalfa, wheat, and sorghum. Other uses included controlling unwanted fish growth in lakes and pests on livestock. All registered uses of toxaphene in the U.S. were canceled in 1990 (EPA EA, 1999). It is still commonly used as an insecticide on bananas and pineapples in Puerto Rico and the Virgin Islands (EPA EA, 1999).

Chemical Characteristics

Persistence and Bioaccumulation

Toxaphene has persistence half-life values in soil of 1 to 11 years, persistence half-life values in water of 1 to 5 years, and persistence half-life values in air of 19 hours to 16 days (EPA, PBT Chemicals Final Rule, October 1999).

Toxaphene has a BCF value of 34,050 (EPA, PBT Chemicals Final Rule, October 1999).

Environmental Fate and Transport

Although toxaphene does not occur naturally in the environment and all uses of toxaphene have been banned, it is still present in the environment largely as a result of past releases through its use as a pesticide. It was applied to crops and bodies of water. Toxaphene may also enter the environment from hazardous waste sites (ATSDR, August 1996). In the atmosphere, toxaphene can be transported unchanged for significant distances before it is deposited to the earth. It may persist for weeks to years, depending on conditions. In soil systems, toxaphene also has similarly strong persistence, although some may evaporate. Toxaphene bioaccumulates in aquatic and terrestrial organisms. In aquatic environments, toxaphene is found mostly in bottom sediments because of its low water solubility, although some may remain in the water column. Toxaphene has a strong persistence in water, although some may evaporate from surface water (EPA, OW, September 1999).

Health and Environmental Effects

Exposure to toxaphene may result from food, drinking water, outdoor air, and contaminated soil at hazardous waste sites. Acute exposure to high levels of toxaphene, though rare even for hazardous waste sites, produces significant adverse effects to both humans and animals. These primarily include adverse effects to the central nervous system and include hyper-salivation, hyper-excitability, behavioral changes, muscle spasms, convulsions, and death. Additionally, inhalation exposure to toxaphene can also cause adverse respiratory effects in both humans and animals. Animal studies have shown adverse effects to the liver and kidney and to a lesser extent the heart and immune system (ATSDR, August 1996). Exposure to toxaphene has caused damage to adrenal and thyroid glands and the immune system (EPA, OPPT, March 2001).

Adverse developmental effects have been observed in laboratory animals following toxaphene ingestion at doses below those required to induce maternal toxicity. The most sensitive endpoints of fetal toxicity appear to be behavioral effects and immunosuppression. An increased risk for cancer has been demonstrated in laboratory rodents exposed to high doses of toxaphene. EPA classifies toxaphene as a probable human carcinogen (EPA, OAQPS, May 2001).

Efforts to Reduce Pollution from the Chemical

Toxaphene's registration was canceled in 1982, except for emergency use for corn, cotton, and small grains for specific insect infestation (EPA EA, 1999). Existing stocks were used without restrictions until 1986 (EPA EA, 1999). All uses were banned in 1990 (EPA EA, 1999). In 1993, the EPA banned the importation of food containing toxaphene residues into the United States or any of its territories. EPA has determined that toxaphene is a "hazardous air pollutant" under the Clean Air Act (CAA) and has also established limits on the amount of toxaphene that can be released from a plant into wastewater. Toxaphene was listed in TRI at a higher threshold prior to the PBT chemical modifications to TRI reporting requirements. Several state and local governments have implemented programs to aid in proper disposal of toxaphene.

The federal government has developed regulatory standards and guidelines to protect individuals from the potential harmful health effects of toxaphene in drinking water and food (ATSDR, August 1996). The FDA and EPA have set limits on toxaphene levels in foods including sunflower seeds, soybeans, grains, cottonseed, fruits, and vegetables.

TRIFLURALIN

Introduction

Trifluralin (CAS 1582-09-8) is an herbicide used primarily on cotton and soybean crops. Trifluralin is a yellow-orange crystalline solid.

Sources and Uses

Trifluralin is made by the reaction of di-n-propylamine with 2,6-dinitro-4-trifluoromethylchlorobenzene (EPA EA, 1999). Production of trifluralin has declined since restrictions on product formulation were implemented in 1982 due to carcinogenicity and mutagenicity concerns (EPA EA, 1999). It is used on soybean crops, cotton, wheat, alfalfa, sunflowers and many other crops.

Chemical Characteristics

Persistence and Bioaccumulation

Trifluralin has persistence half-life values in soil of 99 to 394 days, persistence half-life values in water of 5 to 37 days, and persistence half-life values in air of 0.42 to 3.2 hours (EPA, PBT Chemicals Final Rule, October 1999).

Trifluralin has a BCF value of 5,674 (EPA, PBT Chemicals Final Rule, October 1999).

Environmental Fate and Transport

Trifluralin may enter the environment through application as a pesticide or from waste disposal sites. In the atmosphere, trifluralin is carried significant distances on dust particles before they are deposited to the earth. In soil systems, microbes degrade trifluralin. Trifluralin remaining on the soil surface may be decomposed by sunlight or may evaporate (EXTOXNET, June 1996). The persistence of trifluralin in soil is highly variable, depending on several factors including depth of incorporation, soil moisture and temperature. Trifluralin binds tightly to soil sediments and particulates in the water column, and it bioaccumulates in terrestrial and aquatic organisms.

Health and Environmental Effects

According to EPA's OPP, trifluralin is technically classified under Toxicity Category IV ("practically non-toxic") for acute oral toxicity and dermal irritation, and Toxicity Category III ("slightly toxic") for acute dermal toxicity, acute inhalation toxicity, and eye irritation potential (see discussion on Toxicity Categories under the section for pendimethalin). Trifluralin is also considered a dermal sensitizer. In

ecotoxicity studies, trifluralin also was found to be moderately to highly toxic to aquatic organisms (U.S. EPA, April 1996).

Although no human studies conclusively link trifluralin exposure to cancer, rats have been observed under laboratory conditions to develop malignant tumors in the kidneys, bladder and thyroid after trifluralin exposure (EPA, OAQPS, May 2001). Trifluralin is classified by EPA as a possible human carcinogen. Though the cancer risk to the general population is relatively low, the risk to populations that directly handle the chemical (workers, mixers, applicators, etc.) is significantly higher. Prolonged or repeated exposure to trifluralin may cause skin irritation, and liver and kidney damage. Reproductive and developmental effects, including depressed fetal weight and skeletal abnormalities, have been observed in laboratory animals (EPA, OAQPS, May 2001). Trifluralin also interferes with hormone regulation.

Efforts to Reduce Pollution from the Chemical

Restrictions on product formulation were implemented due to carcinogenicity and mutagenicity concerns. In August, 1979, trifluralin was brought under review by EPA because of the presence of a N-nitrosamine contaminant which had been shown to have adverse health effects in animals. After the review's conclusion in 1982, EPA required N-nitrosamine contaminant levels in trifluralin not to exceed 0.5 ppm (EXTOXNET, September 1993). Furthermore, EPA provides guidelines for the allowable amount of trifluralin in drinking water and requires that products containing trifluralin bear the Signal Words "Caution" or "Warning," depending on the type of formulation. Trifluralin was listed in TRI at a higher reporting threshold prior to the PBT chemical modifications to TRI reporting requirements. A number of states and local governments sponsor programs to encourage the proper disposal of trifluralin.

2000 TRI DATA FOR PESTICIDES

On-site and Off-site Releases

As shown in Table 3-33, there were 138 TRI forms submitted for the group of eight pesticides subject to the lower reporting thresholds for PBT chemicals for 2000. On- and off-site releases for these pesticides totaled 82,443 pounds.

Pendimethalin had the largest releases of this group, with 31,293 pounds or 38.0 percent of the total releases for the eight pesticides. Trifluralin had the second largest releases, with 27,624 pounds or 33.5 percent of the total releases.

On-site releases to RCRA subtitle C landfills were the largest type of release for the group of pesticides, accounting for 40.9 percent of total releases or 33,707 pounds (see Figure 3-13). The second largest release type was other on-site land releases, which accounted for 34.6 percent or 28,498 pounds. (Types of on-site land releases are described in Box 1-4 in Chapter 1.)

Off-site releases (transfers to disposal) totaled 13,565 pounds or 16.5 percent, and air emissions were 6,340 pounds or 7.7 percent. Surface water discharges and underground injection of pesticides totaled less than 350 pounds.

Trifluralin had the largest on-site land releases to RCRA subtitle C landfills, with 11,216 pounds, which was one-third of the releases to RCRA subtitle C landfills reported for all eight pesticides in 2000. Trifluralin also had the largest air emissions, with 5,504 pounds or 86.8 percent of the total for pesticides.

Pendimethalin had the largest other on-site land releases, with 20,343 pounds or 71.4 percent of the total of such releases for the eight pesticides and the largest off-site releases (transfers to disposal) with 9,555 pounds or 70.4 percent of the total off-site releases of the pesticides in 2000.

Waste Management Data

Quantities of TRI Chemicals in Waste

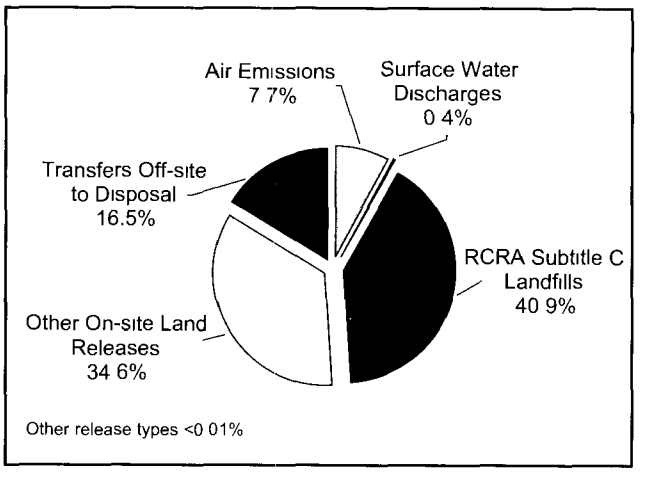
Production-related waste of pesticides totaled 2.6 million pounds in 2000, as shown in Table 3-34. Most (2.3 million pounds or 90.6 percent) of the total production-related waste was treated on-site (see Figure 3-14). Another 5.5 percent (140,172 pounds) was treated off-site site, and 3.4 percent (87,062 pounds) was released on- and off-site. Other types of waste management totaled less than one percent.

The chemical chlordane had the greatest production-related waste, accounting for 32.4 percent (827,249 pounds) of production-related waste for all eight pesticides. Most of the chlordane production-related waste was treated on-site. The 812,323 pounds of chlordane treated on-site represented 98.2 percent of total production-related waste of chlordane in 2000.

The chemical pendimethalin accounted for 27.8 percent or 711,106 pounds of production-related waste of this group of pesticides. Over 92.2 percent (656,145 pounds) of pendimethalin production-related waste was treated on-site, and 4.4 percent (31,359 pounds) was released on- and off-site.

The chemical trifluralin accounted for the largest quantity released on- and off-site, with 33,259 pounds, as well as amounts treated off-site, with 109,807 pounds.

Figure 3-13: Distribution of TRI On-site and Off-site Releases, 2000: Pesticides



Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

Transfers Off-site for Further Waste Management/Disposal

Transfers off-site for further waste management and disposal of this group of eight pesticides totaled almost 141,477 pounds in 2000 (see Table 3-35). Transfers to treatment accounted for 89.6 percent of the total transfers for further waste management and disposal of the pesticides in 2000 (see Figure 3-15). Transfers to treatment were 126,727 pounds. Other transfers to disposal were 13,735 pounds or 9.7 percent of total transfers for further waste management and disposal of pesticides for 2000. Other types of transfers were about 1,000 pounds.

Table 3-33: TRI On-site and Off-site Releases, 2000: Pesticides

		On-site Releases							Off-site Releases	
				Underground Injection		On-site Land Releases				
CAS Number Chemical	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
	Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
309-00-2 Aldrin	11	0 79	0 00	0 00	0 00	2,342 00	0 00	2,342 79	2 58	2,345.37
57-74-9 Chlordane	21	13 70	0 00	0 00	0 00	8,947 74	0 00	8,961 44	828 59	9,790 03
76-44-8 Heptachlor	15	6 60	0 00	0 00	0 00	2,372 56	0 00	2,379 16	221 87	2,601 03
465-73-6 Isodrin	6	0 05	0 00	2 95	0 00	0 00	0 00	3 00	0 00	3 00
72-43-5 Methoxychlor	20	59 83	0 00	0 00	0 00	2,569 00	0 00	2,628 83	31 75	2,660 58
40487-42-1 Pendimethalin	18	733 54	329 00	0 00	0 00	332 00	20,343 00	21,737 54	9,555 00	31,292 54
8001-35-2 Toxaphene	16	20 98	1 62	0 21	0 00	5,928 02	0 00	5,950 83	176 14	6,126 97
1582-09-8 Trifluralin	31	5,504 15	0 00	0 00	0 00	11,216 00	8,155 00	24,875 15	2,748 67	27,623 82
Total	**138**	**6,339.64**	**330.62**	**3.16**	**0.00**	**33,707.32**	**28,498.00**	**68,878.74**	**13,564.60**	**82,443.34**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

The chemical trifluralin accounted for 71.0 percent (100,421 pounds) of total transfers for further waste management and disposal of pesticides for 2000. Most (96.9 percent or 97,264 pounds) of this was transferred to treatment.

Pendimethalin accounted for 20.6 percent or 29,160 pounds of total transfers for further waste management and disposal. Two-thirds of it (19,602 pounds) was transferred to treatment and one-third (9,555 pounds) to disposal.

TRI Data by State

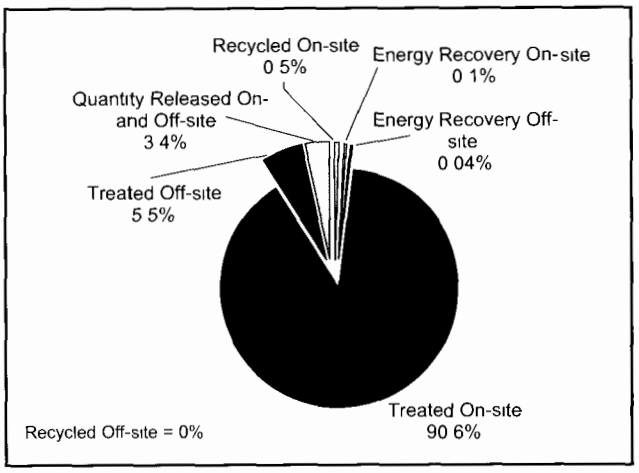
Facilities in Ohio, with 18 forms, and Texas, with 16 forms, submitted the largest number of forms in 2000 for the group of eight PBT chemical pesticides. All other states had less than 10 forms submitted.

On- and Off-site Releases

In 2000, facilities in Florida reported the largest total on- and off-site releases of pesticides (see Table 3-36), a total of 20,342 pounds, or 24.7 percent of the total for 2000.

Alabama reported the second largest total releases, with 19,515 pounds representing 23.7 percent of total releases of this group of pesticides. Ohio reported the third largest amount with 13,053 pounds, which was 15.8 percent of the total. Oregon accounted for 11,820 pounds, the fourth largest amount, which was 14.3 percent of the total releases of the eight pesticides in all the states.

Figure 3-14: Quantities of TRI Chemicals in Waste, 2000: Pesticides



Note: Data are from Section 8 of Form R

All of Florida's releases of pesticides were other on-site land releases (that is, on-site land releases other than RCRA subtitle C landfills). The 20,342 pounds of such releases in Florida represented 71.4 percent of the total of other on-site land releases for this group of pesticides.

Practically all of Alabama's releases were on-site land releases to RCRA subtitle C landfills. These releases totaled 19,510 pounds and accounted for 57.9 percent of total RCRA subtitle C landfill releases of this group of pesticides in 2000.

Almost 80.7 percent (10,528 pounds out of 13,053 pounds) of total releases in Ohio, the state with the third largest total releases, were off-site releases

Table 3-34: Quantities of TRI Chemicals in Waste Managed, 2000: Pesticides

CAS Number	Chemical	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-production-related Waste Managed Pounds
309-00-2	Aldrin	0 00	0.00	0.00	0.00	82,504.75	283.00	2,345.32	85,133.07	0 00
57-74-9	Chlordane	0 00	0 00	230 00	0 00	812,322 92	5,686 05	9,010 26	827,249 23	0 00
76-44-8	Heptachlor	0.00	0 00	42.00	0 00	237,739.73	3,773.30	2,394.03	243,949 06	0.00
465-73-6	Isodrin	0 00	0 00	0 00	0 00	6,603 84	0 00	3 00	6,606 84	0 00
72-43-5	Methoxychlor	0.00	0 00	225 00	755.00	290,474 16	431.60	2,682.64	294,568.40	0 00
40487-42-1	Pendimethalin	4,000 00	0 00	0 00	0 00	656,145 00	19,602 00	31,358 55	711,105 55	0 00
8001-35-2	Toxaphene	0.00	0 00	1,072 00	0.00	210,240.69	589 24	6,008 47	217,910.40	0 00
1582-09-8	Trifluralin	7,501 00	0 00	0 00	228 00	16,709 08	109,807 00	33,259 47	167,504 55	45 00
	Total	**11,501.00**	**0.00**	**1,569.00**	**983.00**	**2,312,740.17**	**140,172.19**	**87,061.74**	**2,554,027.10**	**45.00**

Note: Data are from Section 8 of Form R

(transfers to disposal). The rest (2,525 pounds) were air emissions. All of the releases reported by Oregon, the state with the fourth largest total releases, were on-site land releases to RCRA subtitle C landfills.

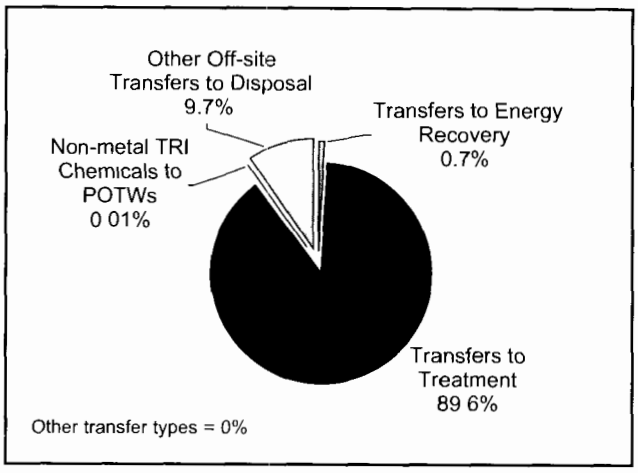
As shown in Map 3-5, the four states of Florida, Alabama, Ohio and Oregon each released over 10,000 pounds of the eight PBT chemical pesticides in 2000. Three other states, Kansas, Iowa and California, released over 1,000 pounds each.

Waste Management Data

The state with the largest quantity of total production-related waste of this group of eight pesticides in 2000 was Missouri (see Table 3-36). Missouri reported 647,483 pounds of total production-related waste and accounted for 25.3 percent of the total production-related waste of the pesticides. Ohio ranked second with 552,604 pounds (21.6 percent of the total). Two other states, Utah and Texas, each reported 13.0 percent of the total with 331,539 pounds and 330,242 pounds respectively.

Each of these four states reported most of their production-related waste of this group of pesticides as treated on-site. Missouri, with the largest total releases and treatment on-site, reported 630,000 pounds treated on-site, which was 97.3 percent of the total production-related waste for the state and 27.2 percent of all waste treated on-site of the eight pesticides in 2000.

Figure 3-15: Distribution of TRI Transfers Off-site for Further Waste Management/Disposal, 2000: Pesticides



Note: Total Transfers Off-site for Further Management/Disposal are from Section 6 of Form R

Ohio's treatment on-site totaled 520,766 pounds or 94.2 percent of the state's total production-related waste and 22.5 percent of waste treated on-site reported by all the states. Utah reported 331,516 pounds treated on-site, over 99.9 percent of the state's total production-related waste. Texas had 330,235 pounds treated on-site, accounting for practically all of its production-related waste.

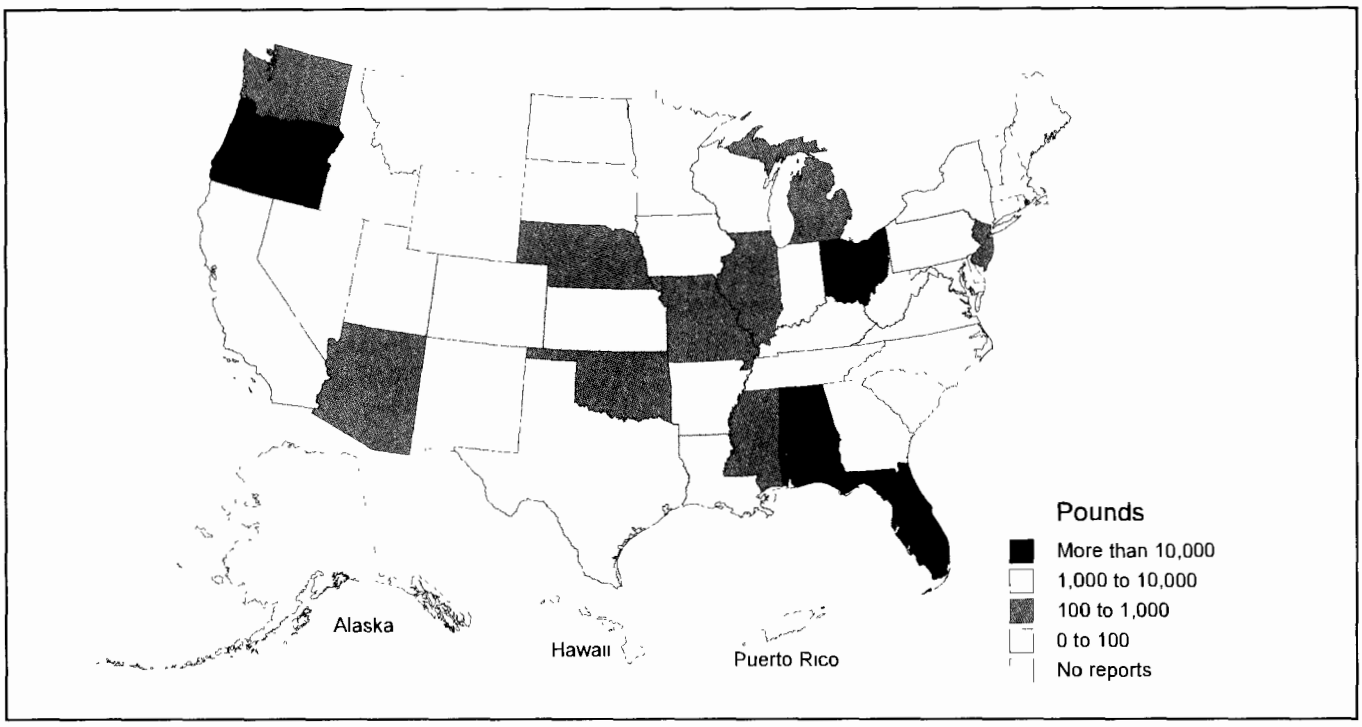
Table 3-35: TRI Transfers Off-site for Further Waste Management/Disposal, 2000: Pesticides

CAS Number	Chemical	Transfers to Recycling	Transfers to Energy Recovery	Transfers to Treatment	Transfers to POTWs: Metals and Metal Compounds	Transfers to POTWs: Non-metal TRI Chemicals	Other Off-site Transfers*	Other Off-site Transfers to Disposal**	Total Transfers for Further Waste Management/ Disposal
		Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
309-00-2	Aldrin	0 00	0.00	283.30	0.00	0.00	0 00	2.58	285.88
57-74-9	Chlordane	0.00	0 00	4,905.41	0.00	0.00	0 00	828 59	5,734.00
76-44-8	Heptachlor	0.00	0.00	3,773.30	0 00	0.00	0.00	221.87	3,995.17
465-73-6	Isodrin	0.00	0 00	0 00	0.00	0 00	0 00	0 00	0.00
72-43-5	Methoxychlor	0.00	775.00	430.00	0 00	0.00	0.00	31.75	1,236.75
40487-42-1	Pendimethalin	0 00	0.00	19,602 00	0 00	3 00	0 00	9,555 00	29,160 00
8001-35-2	Toxaphene	0 00	0 00	468.54	0.00	0.00	0 00	176 14	644.68
1582-09-8	Trifluralin	0 00	228.00	97,264 00	0 00	10 00	0 00	2,918 67	100,420 67
	Total	**0.00**	**1,003.00**	**126,726.55**	**0.00**	**13.00**	**0.00**	**13,734.60**	**141,477.15**

Note: Total Transfers Off-site for Further Management/Disposal are from Section 6 of Form R

* Other Off-site Transfers are transfers reported without a valid waste management code
** Does not include transfers to POTWs of metals and metal compounds

Map 3-5: Total On- and Off-site Releases, 2000: Pesticides



The states with the largest quantity released on- and off-site were Florida with 20,402 pounds, Alabama with 19,515 pounds, Ohio with 13,072 pounds and Oregon with 11,820 pounds.

TRI Data by Industry (2-digit SIC Code)

On- and Off-site Releases

Only seven industry sectors reported releases of this group of pesticides in 2000. The hazardous waste/solvent recovery industries reported the largest total releases of any industry sector, 34,846 pounds or 42.3 percent of the total releases (see Table 3-37).

The hazardous waste/solvent recovery industries also reported the largest amounts of on-site land releases to RCRA subtitle C landfills, with 33,375 pounds representing 99.0 percent of the total on-site land releases to RCRA subtitle C landfills in 2000.

The food industry had the second largest total releases, with 20,646 pounds of total releases, most of which were other on-site land releases (that is, other than RCRA subtitle C landfills). These releases by the food industry were 72.2 percent of all other on-site land releases of this group of pesticides in 2000.

The chemical manufacturing industry reported the third largest amount of total releases, with 14,564 pounds. Over 81.2 percent (11,831 pounds) of this was off-site releases (transfers to disposal). These off-site releases by the chemicals industry accounted for 87.2 percent of total off-site releases in 2000.

Waste Management

The hazardous waste/solvent recovery industries reported the largest amount of total production-related waste of pesticides in 2000 (see Table 3-37). With 1.8 million pounds of production-related waste, this industry sector accounted for 68.9 percent of all production-related waste. Almost 1.7 million pounds of pesticides were treated on-site by the hazardous waste/solvent recovery industries, representing 95.6 percent of this industry's total production-related waste. The hazardous waste/solvent recovery industries also reported 43,399 pounds as treated off-site and 33,761 pounds released on- and off-site.

Table 3-36: Summary of TRI Information by State, 2000: Pesticides

State	Total Forms	On-site Releases: Total Air Emissions	On-site Releases: Surface Water Discharges	On-site Releases: Underground Injection: Class I Wells	On-site Releases: Underground Injection: Class II-V Wells	On-site Releases: On-site Land Releases: RCRA Subtitle C Landfills	On-site Releases: On-site Land Releases: Other On-site Land Releases	On-site Releases: Total On-site Releases	Off-site Releases: Transfers Off-site to Disposal	Total On- and Off-site Releases
	Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
Alabama	4	5 10	0 00	0.00	0 00	19,510 00	0 00	19,515 10	0 00	19,515 10
Arizona	2	0 00	0 00	0 00	0 00	0 00	0 00	0 00	903 00	903 00
Arkansas	9	25 00	0.00	0 00	0.00	0 00	0 00	25.00	0 00	25 00
California	7	79 00	0 00	0 00	0 00	968 32	0 00	1,047 32	375 00	1,422 32
Colorado	1	1 00	0 00	0.00	0 00	0 00	0 00	1 00	0 00	1 00
Florida	2	0 00	0 00	0 00	0 00	0 00	20 342 00	20,342 00	0 00	20,342 00
Illinois	7	5.04	0 00	0 00	0 00	0 00	0 00	5 04	407 43	412 47
Iowa	6	1,759 80	0 00	0 00	0 00	0 00	0 00	1,759 80	90 00	1,849 80
Kansas	3	1,660 00	0 00	0.00	0 00	0.00	7,800 00	9,460 00	1.64	9,461.64
Kentucky	7	2 90	0 00	0 00	0 00	0 00	0 00	2 90	27 92	30 82
Louisiana	7	0 00	0 00	0 00	0.00	0 00	0.00	0 00	0 00	0 00
Michigan	2	13 00	0 00	0 00	0 00	545 00	0 00	558 00	24 00	582 00
Mississippi	2	16.00	0 00	0.00	0 00	0 00	0 00	16.00	872 00	888 00
Missouri	7	168 24	22 00	0 00	0 00	0 00	1 00	191 24	195 40	386 64
Nebraska	5	12 30	0 00	0.00	0 00	0 00	112 00	124 30	112 00	236 30
New Jersey	8	9 80	302 00	0 00	0 00	332 00	0 00	643 80	0 88	644 68
New York	1	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
North Dakota	2	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Ohio	18	2,524.96	0 00	0.00	0.00	0 00	0 00	2,524 96	10,528.00	13,052 96
Oklahoma	1	0 00	0 00	0 00	0 00	532 00	0 00	532 00	0 00	532 00
Oregon	5	0 00	0 00	0 00	0 00	11,820.00	0 00	11,820.00	0 00	11,820 00
Pennsylvania	4	0 10	0 00	0 00	0 00	0 00	0 00	0 10	0 00	0 10
Texas	16	1.18	1 62	3 16	0 00	0 00	0 00	5 96	0 60	6 56
Utah	6	0 11	0 00	0 00	0 00	0 00	0 00	0 11	24 03	24 14
Virginia	1	5.00	5 00	0 00	0 00	0 00	0 00	10.00	0 00	10 00
Washington	3	51 00	0 00	0 00	0 00	0 00	243 00	294 00	0 00	294 00
Wisconsin	2	0.11	0 00	0 00	0 00	0 00	0 00	0 11	2 70	2 81
Total	**138**	**6,339.64**	**330.62**	**3.16**	**0.00**	**33,707.32**	**28,498.00**	**68,878.74**	**13,564.60**	**82,443.34**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

Table 3-37: Summary of TRI Information by Industry, 2000: Pesticides

SIC Code	Industry	Total Forms	On-site Releases: Total Air Emissions	On-site Releases: Surface Water Discharges	On-site Releases: Underground Injection: Class I Wells	On-site Releases: Underground Injection: Class II-V Wells	On-site Releases: On-site Land Releases: RCRA Subtitle C Landfills	On-site Releases: On-site Land Releases: Other On-site Land Releases	On-site Releases: Total On-site Releases	Off-site Releases: Transfers Off-site to Disposal	Total On- and Off-site Releases
		Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
20	Food	4	52 00	0 00	0 00	0 00	0 00	20,585 00	20,637 00	9 00	20,646 00
26	Paper	1	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
28	Chemicals	33	1,964 00	324 00	0 00	0 00	332 00	113 00	2,733 00	11,830 70	14,563 70
30	Plastics	1	74 00	0 00	0 00	0 00	0 00	0 00	74 00	334 00	408 00
32	Stone/Clay/Glass	4	0 10	0 00	0 00	0 00	0 00	0 00	0 10	0 00	0 10
39	Miscellaneous	1	2,510 00	0 00	0 00	0 00	0 00	0 00	2,510 00	0 00	2,510 00
	Multiple codes 20-39	1	1,660 00	0 00	0 00	0 00	0 00	7,800 00	9,460 00	0 00	9,460 00
	No codes 20-39	1	5 00	5 00	0 00	0 00	0 00	0 00	10 00	0 00	10 00
	Subtotal Original Industries	**46**	**6,265.10**	**329.00**	**0.00**	**0.00**	**332.00**	**28,498.00**	**35,424.10**	**12,173.70**	**47,597.80**
4953/7389	Hazardous Waste/Solvent Recovery	92	74 54	1 62	3 16	0 00	33,375 32	0 00	33,454 64	1,390 90	34,845 55
	Subtotal for New Industries	**92**	**74.54**	**1.62**	**3.16**	**0.00**	**33,375.32**	**0.00**	**33,454.64**	**1,390.90**	**34,845.55**
	Total	**138**	**6,339 64**	**330.62**	**3 16**	**0 00**	**33,707 32**	**28,498 00**	**68,878 74**	**13,564.60**	**82,443 34**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

Table 3-36: Summary of TRI Information by State, 2000: Pesticides (continued)

State	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site	Total Production-related Waste Managed	Non-production-related Waste Managed
	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Pounds	Pounds	Pounds
Alabama	0.00	0.00	0 00	0.00	0 00	57.00	19,515.00	19,572.00	0.00
Arizona	0 00	0 00	0 00	0 00	0 00	903 00	0 00	903 00	0 00
Arkansas	0.00	0.00	0.00	983.00	218,243.00	1,074 00	25 00	220,325.00	0.00
California	2,000 00	0 00	0 00	0 00	0 00	0 25	1,349 32	3,349 57	45 00
Colorado	0.00	0 00	0.00	0 00	0 00	5 00	5 81	10.81	0.00
Florida	0 00	0 00	0 00	0 00	0 00	0 00	20,402 00	20,402 00	0 00
Illinois	0.00	0.00	0.00	0.00	40,762 00	0.00	201 15	40,963.15	0.00
Iowa	0 00	0 00	0 00	0 00	35 00	69,786 00	2,018 00	71,839 00	0 00
Kansas	0 00	0 00	0.00	0 00	58 32	1 64	9,500 00	9,559.96	0.00
Kentucky	0 00	0 00	0 00	0.00	19,222.50	396 30	30 82	19,649 62	0 00
Louisiana	0.00	0.00	0 00	0.00	210 00	40,939.00	0.00	41,149 00	0 00
Michigan	0 00	0 00	0 00	0 00	2 00	0 00	582 00	584 00	0 00
Mississippi	0 00	0 00	0 00	0 00	0 00	0.00	1,129 00	1,129 00	0.00
Missouri	1 00	0 00	0 00	0 00	630,000 00	11,707 00	5,774 60	647,482 60	0 00
Nebraska	0.00	0.00	0 00	0.00	17,173.00	0.00	124.00	17,297 00	0.00
New Jersey	0 00	0 00	0 00	0 00	204,517 00	5,984 00	646 20	211,147 20	0 00
New York	0 00	0 00	0 00	0 00	0.00	50 00	0.00	50.00	0.00
North Dakota	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Ohio	9,500.00	0 00	0 00	0 00	520,766 00	9,266.00	13,071.96	552,603 96	0 00
Oklahoma	0 00	0 00	0 00	0 00	0 00	0 00	532 00	532 00	0 00
Oregon	0 00	0.00	0.00	0.00	0 00	1 00	11,820.00	11,821.00	0.00
Pennsylvania	0 00	0 00	1,569 00	0 00	0 00	0 00	0 10	1,569 10	0 00
Texas	0.00	0 00	0 00	0.00	330,235 00	0 00	7.05	330,242 05	0.00
Utah	0 00	0 00	0 00	0 00	331,516 35	0 00	23 02	331,539 37	0 00
Virginia	0 00	0.00	0.00	0 00	0 00	0 00	10 00	10.00	0 00
Washington	0 00	0 00	0 00	0 00	0 00	0 00	294 00	294 00	0 00
Wisconsin	0.00	0 00	0 00	0.00	0.00	2 00	0.71	2.71	0 00
Total	**11,501.00**	**0 00**	**1,569.00**	**983.00**	**2,312,740.17**	**140,172.19**	**87,061.74**	**2,554,027.10**	**45.00**

Note: Data are from Section 8 of Form R

The chemical manufacturing industry reported the second largest amount of total production-related waste for this group of pesticides, with a total of 753,189 pounds. This was 29.5 percent of total production-related waste of the pesticides in 2000. Most of the chemicals industry's production-related waste (83.7 percent or 630,225 pounds) was treated on-site, and 12.8 percent (96,714 pounds) was treated off-site. The chemicals industry's amount treated off-site represented 69.0 percent of the total amount of pesticides treated off-site in 2000.

Table 3-37: Summary of TRI Information by Industry, 2000: Pesticides (continued)

SIC Code	Industry	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site	Total Production-related Waste Managed	Non-production-related Waste Managed
		On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Pounds	Pounds	Pounds
20	Food	0 00	0 00	0 00	0 00	86 00	10 00	20,706 00	20,802 00	0 00
26	Paper	0 00	0 00	0 00	0 00	0 00	50 00	0 00	50 00	0 00
28	Chemicals	6,001 00	0 00	0.00	0 00	630,225 00	96,713 60	20,249 67	753,189 27	45 00
30	Plastics	0 00	0 00	0 00	0 00	0 00	0 00	335 00	335 00	0 00
32	Stone/Clay/Glass	0 00	0 00	1,569 00	0 00	0 00	0 00	0 10	1,569 10	0 00
39	Miscellaneous	5,500 00	0 00	0 00	0 00	0 00	0 00	2,500 00	8,000 00	0 00
	Multiple codes 20-39	0 00	0 00	0 00	0 00	0 00	0 00	9,500 00	9,500 00	0 00
	No codes 20-39	0 00	0 00	0 00	0 00	0 00	0 00	10 00	10 00	0 00
	Subtotal Original Industries	**11,501.00**	**0.00**	**1,569.00**	**0.00**	**630,311.00**	**96,773.60**	**53,300.77**	**793,455.37**	**45.00**
4953/7389	Hazardous Waste/Solvent Recovery	0 00	0 00	0 00	983 00	1,682,429 17	43,398 59	33,760 97	1,760,571 73	0 00
	Subtotal New Industries	**0.00**	**0.00**	**0.00**	**983.00**	**1,682,429.17**	**43,398.59**	**33,760.97**	**1,760,571.73**	**0.00**
	Total	**11,501 00**	**0 00**	**1,569 00**	**983 00**	**2,312,740 17**	**140,172.19**	**87,061.74**	**2,554,027.10**	**45 00**

Note: Data are from Section 8 of Form R

Table 3-38: Current Year and Projected Quantities of TRI Chemicals in Waste, 2000: Pesticides

Waste Management Activity	Current Year 2000 Total Pounds	Current Year 2000 Percent of Total	Projected 2001 Total Pounds	Projected 2001 Percent of Total	Projected 2002 Total Pounds	Projected 2002 Percent of Total
Recycled On-site	11,501.00	0 5	11,501 00	0 5	11,501 00	0.5
Recycled Off-site	0 00	0 0	0 00	0 0	0 00	0 0
Energy Recovery On-site	1,569 00	0.1	1,647.00	0 1	1,730.00	0 1
Energy Recovery Off-site	983 00	0 0	755 00	0 0	755 00	0 0
Treated On-site	2,312,740 17	90.6	2,104,605 15	91 4	2,003,688 95	91 1
Treated Off-site	140,172 19	5 5	110,272 36	4 8	106,283 41	4 8
Quantity Released On- and Off-site	87,061 74	3.4	74,672.38	3 2	74,746 09	3 4
Total Production-related Waste Managed	**2,554,027.10**	**100.0**	**2,303,452.89**	**100.0**	**2,198,704.45**	**100.0**
Waste Management Activity	**Projected Change 2000-2001 Percent**		**Projected Change 2001-2002 Percent**		**Projected Change 2000-2002 Percent**	
Recycled On-site	0 0		0.0		0 0	
Recycled Off-site	--		--		--	
Energy Recovery On-site	5 0		5 0		10 3	
Energy Recovery Off-site	-23 2		0 0		-23 2	
Treated On-site	-9 0		-4 8		-13 4	
Treated Off-site	-21 3		-3 6		-24 2	
Quantity Released On- and Off-site	-14 2		0 1		-14.1	
Total Production-related Waste Managed	**-9.8**		**-4.5**		**-13.9**	

Note· Current year and projected amounts are from Section 8 of Form R for 2000

Projected Quantities of TRI Chemicals Managed in Waste, 2000-2002

TRI facilities expected to decrease their production-related waste of pesticides between 2000 and 2001 by 9.8 percent, from 2.6 million pounds to 2.3 million pounds, with an additional decrease of 4.5 percent to 2.2 million pounds by 2002 (see Table 3-38).

The decrease was projected to occur in amounts treated on- and off-site. Treatment on-site was projected to decrease by 13.4 percent from 2001 to 2002 and treatment off-site by 24.2 percent. The quantity released on- and off-site was projected to decrease by 14.2 percent from 2000 to 2001 but then increase slightly, by 0.1 percent, from 2001 to 2002. On- and off-site releases are the least-desirable outcome under the waste management hierarchy described in **Waste Management** in Chapter 1 (Figure 1-2).

Source Reduction

In 2000, 15 forms were filed reporting source reduction activities for this group of pesticides (see Table 3-39). As noted in **Waste Management** in Chapter 1, source reduction—an activity that prevents the generation of waste—is the preferred waste management option. These 15 forms represented 10.9 percent of all forms submitted for these pesticides in 2000.

Table 3-39: Forms Reporting Source Reduction Activity, by Category, 2000: Pesticides

CAS Number Chemical	Total Form Rs Number	Forms Reporting Source Reduction Activity Number	Forms Reporting Source Reduction Activity Percent of All Form Rs Percent	Category of Source Reduction Activity: Good Operating Practices Number	Inventory Control Number	Spill and Leak Prevention Number	Raw Materials Modifications Number	Process Modifications Number	Cleaning and Degreasing Number	Surface Preparation and Finishing Number	Product Modifications Number
309-00-2 Aldrin	11	1	9 1	1	0	0	0	0	0	0	0
57-74-9 Chlordane	21	1	4 8	2	0	0	0	0	0	0	0
76-44-8 Heptachlor	15	1	6.7	2	0	0	0	0	0	0	0
465-73-6 Isodrin	6	0	0 0	0	0	0	0	0	0	0	0
72-43-5 Methoxychlor	20	3	15 0	4	0	0	0	0	0	0	0
40487-42-1 Pendimethalin	18	4	22 2	4	0	0	0	0	0	0	0
8001-35-2 Toxaphene	16	1	6 3	2	0	0	0	0	0	0	0
1582-09-8 Trifluralin	31	4	12 9	5	0	0	0	0	0	0	0
Total	**138**	**15**	**10.9**	**20**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Note: All source reduction activities on a form are counted in the corresponding category Totals do not equal the sum of the categories because forms may report more than one source reduction activity

The only reported type of source reduction activity for the pesticides was good operating practices.

TRI Data for Pesticides Before 2000

Reporting for the group of pesticide PBT chemicals before 2000 was based on the higher TRI thresholds of 25,000 pounds for manufacture or processing of the chemical and 10,000 pounds for otherwise using the chemical. For the reporting year 2000, these thresholds were reduced to 10 pounds for manufacture, processing or otherwise using the pesticides in the manufacturing process. Lowering the threshold, in effect, adds reports by those facilities whose activities were below the higher threshold. Consequently, the amounts for 2000 are not comparable with those for prior years.

Box 3-7 has TRI data reported for pesticide PBT chemicals before 2000.

Box 3-7: TRI Data for Pesticides Before 2000

Following is a brief summary of releases and transfers and total production-related waste for the group of eight pesticides for 1998 and 1999. This table includes reporting by both original and new industries.

TRI Data for Pesticides, 1998-1999

	1998	1999	Change 1998-1999	
	Number	Number	Number	Percent
Forms	58	52	-6	-10.3
	Pounds	Pounds	Pounds	Percent
On-site Releases	131,601	7,759	-123,842	-94.1
Off-site Releases (Transfers to Disposal)	34,026	20,475	-13,551	-39.8
Total On- and Off-site Releases	**165,627**	**28,234**	**-137,393**	**-83.0**
Total Production-related Waste Managed	**1,570,058**	**1,564,559**	**-5,499**	**-0.4**

Two (isodrin and pendimethalin) of the eight pesticide PBT chemicals were added to the TRI list for the 1995 reporting year. The other six have been on the TRI list from the beginning. The following is a summary of releases and transfers and total production-related waste for 1995-1999 for the eight pesticides. This table does not include reporting by new industries for 1998 and 1999 since new industries did not report to TRI before 1998.

TRI Data for Pesticides, 1995-1999

	1995	1998	1999	Change 1995-1999	
	Number	Number	Number	Number	Percent
Forms	32	28	33	1	3.1
	Pounds	Pounds	Pounds	Pounds	Percent
On-site Releases	28,540	12,455	7,693	-20,847	-73.0
Off-site Releases (Transfers to Disposal)	24,490	30,448	20,282	-4,208	-17.2
Total On- and Off-site Releases	**53,030**	**42,903**	**27,975**	**-25,055**	**-47.2**
Total Production-related Waste Managed	**442,920**	**461,798**	**410,349**	**-32,571**	**-7.4**

Other PBT Chemicals

HEXACHLOROBENZENE

Introduction

Hexachlorobenzene (CAS 118-74-1), also known as HCB; HEXA C.B.; phenyl perchloryl; and perchlorobenzene, is an organochlorine compound. It is a white crystalline solid created by the chlorination of benzene. For the rest of this section hexachlorobenzene is referred to by its acronym HCB.

HCB was once used as an agricultural fungicide, but health concerns about the toxicity of HCB led to the cancellation of the registrations of all pesticides that contained HCB as an active ingredient. Its primary use was to treat wheat seeds, onions, and sorghum. As late as 1985 it was used to prevent wheat smut. Although no longer used as an active ingredient in pesticides, HCB is contained as an impurity or formed as a byproduct during the manufacturing of the pesticides ametryn, atrazine cyanazine, dacthal, dienochlor, dipropetryn, lindane, maleic hydrazide, mirex, pentachloronitrobenzene, picloram, prometon, prometryn, propazine, simazine, and terbutryn (EPA, EA, 1999).

Most manufacturers of pesticides containing HCB as an active ingredient canceled their registrations in 1984, with the final manufacturer canceling all registrations for pesticide products containing HCB as an active ingredient in 1985. Under the cancellation, existing inventories of pesticides containing HCB as an active ingredient were allowed to be used until July 1985.

Sources and Uses

A number of manufacturing processes for chlorinated organic compounds generate HCB as a byproduct or impurity. During the manufacture of chlorinated organic chemicals, HCB may be formed by thermal chlorination, oxychlorination, and pyrolysis when carbon and chlorine react at high temperatures. HCB is usually found in the still bottoms generated during product purification or distillation and in air emissions from distillation columns (EPA EA, 1999). HCB may also be found as an impurity in commercial chlorinated solvent products (EPA EA, 1999).

HCB may be produced during the manufacture of chlorine gas from aqueous sodium chloride or potassium chloride by an electrolytic process. The electrolytic process, involving an anode made of powdered graphite with a coal tar pitch binder, leads to the production of a mixture of chlorinated organics that are later removed as a waste byproduct. This waste byproduct, known as "taffy", may contain HCB (EPA EA, 1999).

HCB is also a potential byproduct formed during the production of metallic magnesium when produced via electrolysis with carbon electrodes (EPA EA, 1999). The process leads to the formation of considerable amounts of chlorinated hydrocarbons, including HCB.

The degassing of molten aluminum with hexachloroethylene at aluminum foundries and secondary aluminum smelting plants also produces HCB (EPA EA, 1999). Hydrogen gas from surrounding water vapor dissolves readily in molten aluminum, causing mechanical problems in the aluminum when it is cast. Degassing operations remove the hydrogen gas from the molten aluminum. Gaseous emissions from hexachloroethylene-based aluminum degassing contain high yields of complex organochlorine compounds, including HCB (EPA EA, 1999).

Chemical Characteristics

Persistence and Bioaccumulation

HCB has persistence half-life values in soil of 3 to 6 years and persistence half-life values of 158 to 1,582 days in air. (EPA, PBT Chemicals Final Rule, October 1999).

HCB has a BCF value of 29,600 to 66,000 and BAF values of greater than 2,500,000. (EPA, PBT Chemicals Final Rule, October 1999).

Environmental Fate and Transport

HCB can remain in the environment for a long time because it degrades very slowly. When found in an aquatic environment, most of it will remain in particles on the bottom of lakes and rivers due to its low water solubility. In terrestrial environments, HCB binds strongly to soil. High levels of HCB can bioaccumulate in fish, marine mammals, birds, lichens, and animals that eat lichens or fish. It can also bioaccumulate in wheat, grasses, some vegetables, and other plants.

Health and Environmental Effects

Since production of HCB ceased in the 1980s, there are no studies available that evaluate the health effects in humans or animals from dermal exposure to HCB. Therefore, the levels at which HCB might produce health effects from dermal exposure are not known. Reports on oral human exposure and oral studies in animals showed that oral exposure to HCB typically causes porphyria, cutaneous lesions, neurological effects, altered liver enzyme levels, and changes in morphology of the liver. In addition, adverse effects to the kidneys and immune system as well as reproductive and developmental effects have been reported. Several animal studies of HCB show significant disruption to the endocrine system, especially reductions in thyroid gland activity and enlarged thyroids. Further, animal studies also show that oral exposure to HCB can cause cancer of the liver, kidney, lungs, lymphatic system, blood, and thyroid (ATSDR, September 1997).

A study of people in Turkey who ate bread accidentally contaminated with HCB showed that exposure can cause red-colored urine, skin sores, change in skin color, arthritis, and problems of the liver, nervous system, and stomach (ATSDR, September 1997). In addition, laboratory experiments show that ingestion of HCB over an extended period can damage the liver, thyroid, nervous system, bones, kidneys, blood, and immune and endocrine systems. Increased rates of liver, kidney and thyroid cancer were also observed in laboratory experiments.

Efforts to Reduce Pollution from the Chemical

EPA has undertaken several measures addressing HCB. EPA has recommended that there should be no more than 0.05 milligrams of HCB per liter of water (0.05 mg/L) in water that children drink, and no more than 0.2 mg/L in water that adults drink (ATSDR, September 1997). In addition, spills or accidental releases into the environment of 10 or more pounds of HCB must be reported to EPA under RCRA and CERCLA (ATSDR, September, 1997).

OCTACHLOROSTYRENE

Introduction

Octachlorostyrene (OCS) (CAS 29082-74-4) is a polychlorinated styrene that is an unwanted byproduct of chlorine production, chlorination reactions, and metal product/finishing operations such as the production of metallic magnesium and dry etching of aluminum. OCS may also be formed by the high-temperature incineration of chlorinated hydrocarbons (EPA EA, 1999). OCS is not a commercial product, and no commercial uses are known.

Sources and Uses

Industrial processes that may produce OCS as a byproduct include the following:

- Radical initiated chloralkene polymerization, a process involving aromatic radicals, vinyl or styrene monomers, and chlorine atom sources;
- Electrolysis of chloride salts in processes using graphite or carbon anodes at temperatures greater than 275°C. This process may be used in the production of chlorine, aluminum, sodium metal, tantalum metal, and niobium metal;
- Manufacture of metallic magnesium using carbon electrodes;

- Fused salt electrolysis, a process used to produce sodium from sodium chloride;
- Aluminum production that utilizes a smelting process created by Alcoa in 1976, which incorporates alumina, carbon, chlorine, and a carbon electrode at high temperatures;
- Incineration of chlorine-containing plastics and organic chemicals (EPA EA, 1999);
- Degassing of molten aluminum with hexachloroethane (EPA EA, 1999); and
- Production of perchloroethylene and carbon tetrachloride using the Stauffer or Scientific Design processes (EPA EA, 1999).

Historically, OCS was generated in the manufacture of chlorine from aqueous sodium chloride or potassium chloride by an electrolytic process. The electrolytic process, involving an anode made of powdered graphite with a coal tar pitch binder, leads to the production of a mixture of chlorinated organics that are later removed as a waste byproduct. This waste byproduct, known as "taffy", may contain OCS. The improper disposal of the taffy may release OCS into the environment (EPA EA, 1999).

OCS has been identified as a byproduct from the manufacture of carbon tetrachloride and perchloroethylene. OCS is also a potential byproduct of the production of metallic magnesium. The process involves electrolyzing magnesium chloride to metallic magnesium and chlorine using a carbon electrode. The process leads to the formation of considerable amounts of chlorinated hydrocarbons, including OCS (EPA EA, 1999).

OCS is also produced during degassing of molten aluminum with hexochloroethane (EPA EA, 1999) at aluminum foundries and secondary smelting plants. Hydrogen gas from the surrounding water vapor is readily dissolved in molten aluminum and causes deficient mechanical properties in the resulting aluminum castings. Degassing operations remove the hydrogen gas from the molten aluminum, but emissions from this process have demonstrated high yields of complex organochlorine compounds, including OCS (EPA EA, 1999).

Chemical Characteristics

Persistence and Bioaccumulation

OCS has persistence half-life values in soil of 3 to 6 years and persistence half-life values in air of 1 to 10 hours (EPA, PBT Chemicals Final Rule, October 1999).

OCS has a BCF value of 33,113 and BAF values of greater than 117,000,000 (EPA, PBT Chemicals Final Rule, October 1999).

Environmental Fate and Transport

Compared to other PBT chemicals, little is known about the physical-chemical properties of OCS. Due to its low water solubility, OCS rapidly separates from water and binds to sediments and suspended solids. OCS is extremely persistent, and has a high bioaccumulation potential.

Health and Environmental Effects

Toxicity studies in rats showed that OCS caused adverse liver, thyroid, and kidney effects. The studies also showed statistically significant increases in organ weights (e.g., in the liver and kidney), indicating that OCS causes serious organ damage and impaired organ functions. The results of aquatic toxicity studies indicate that OCS is toxic at relatively low concentrations and thus is highly toxic to aquatic organisms (EPA, PBT Chemicals Proposed Rule, January 1999).

Few studies addressing potential human toxicological effects exist because OCS was never an intentionally produced product for which such studies would be commissioned. However, because OCS is structurally similar to HCB and hexachlorobutadiene, it can be assumed that OCS will be similarly toxic and will affect human and environmental health in a similar manner.

OCS may have the potential to interfere with metabolism in fish and to inhibit photosynthesis in algae. In laboratory animals, adverse affects were observed in the kidney, liver and thyroid. OCS may also promote mutagenicity and carcinogenicity, in addition to acting as an endocrine disruptor.

Efforts to Reduce Pollution from the Chemical

EPA has taken numerous steps to regulate and reduce pollution from OCS. EPA has developed a strategic approach to managing OCS that focuses on the development of a more complete fundamental understanding of OCS sources and sinks, and the quantification of OCS released to the environment. In addition, under the Great Lakes Water Quality Guidance, EPA determined that OCS was a Bioaccumulative Chemical of Concern and has developed methodologies for the Great Lakes States and Tribes to adopt water quality standards and enforceable controls on discharges of pollutants. Under the Clean Water Act, OCS is listed as one of the 29 high priority chemicals for development or revision of water quality criteria due to its bioaccumulation potential and toxicity. While solid wastes and air emissions of OCS are not regulated specifically, regulations governing other chlorinated hydrocarbons, such as PCDD/PCDF and HCB, with which OCS is co-generated, have the effect of governing OCS as well. In addition, individual states have recommended ambient water quality values for OCS for drinking water intake and for fish consumption. Furthermore, remediation of sites contaminated with OCS has been successful in several locations, including landfills in the Niagara Falls area.

PENTACHLOROBENZENE

Introduction

Pentachlorobenzene (CAS 608-93-5) is formed by the chlorination of benzene. Pentachlorobenzene is not used as an end product. It is made as an intermediate in the production of the fungicide pentachloronitrobenzene (quintozene) and as an impurity remaining in the end product. Quintozene has been commercially produced since the 1930s and is also referred to as PCNB and PkhNB. It has also been marketed under the following trade names: Avicol, Earthcide, Folosan, Kobu, Kobutol, Pentagen, RTU, PCNB, Terrachlor, Terrazan and Tri-PCNB (EPA EA, 1999). It is a white or colorless crystalline solid with a characteristic pleasant odor.

Sources and Uses

There are no known natural sources of pentachlorobenzene. Pentachlorobenzene is found in the quintozene process waste stream as an unreacted intermediate and in the final product as an impurity. Quintozene is used as a fungicide for seed treatment, soil application, and as a slime inhibitor in industrial waters.

Pentachlorobenzene may also be produced whenever organic compounds are burned in the presence of a chlorine source. Pentachlorobenzene may be produced in small quantities in medical waste incinerators, cement kilns, municipal waste and sewage sludge incinerators, and secondary copper production.

In addition, pentachlorobenzene is present in dielectric fluids, both those currently in use and in those in storage and destined for disposal by destruction.

Chemical Characteristics

Persistence and Bioaccumulation

Pentachlorobenzene has persistence half-life values in soil of 194 days to more than 22 years and persistence half-life values in air of 46 to 460 days (EPA, PBT Chemicals Final Rule, October 1999).

Pentachlorobenzene has a BCF value of 8,318 and BAF values of greater than 640,000. (EPA, PBT Chemicals Final Rule, October 1999).

Environmental Fate and Transport

Since pentachlorobenzene is created as a by-product or contaminant during the production of other chlo-

rinated organic substances, it can enter the environment from releases of these compounds during storage, use, transport or disposal.

If released to the soil, it will bind strongly to soil and will not significantly biodegrade. If released to water, pentachlorobenzene will bind strongly to bottom sediments or particulate matter in the water column and evaporates with an estimated half-life of 6.5 hours from a river under average conditions (Spectrum Laboratories, November 2001). It does not significantly biodegrade in water and it bioaccumulates in aquatic and terrestrial organisms. If released to the atmosphere, pentachlorobenzene may bind to particulate matter and be transported over long distances before it is deposited to the earth's surface. It may be subject to significant photodegradation.

Health and Environmental Effects

Laboratory feeding studies on rats indicate that oral exposure to pentachlorobenzene may have serious toxic effects to the kidney and liver, as well as serious hematological effects and developmental effects. The studies show statistically significant increases in organ weights, serious damage to organs and impaired organ functions. Ecotoxicity studies on fish, algae, shrimp, and daphnids indicate acute toxicity values associated with pentachlorobenzene. This indicates that pentachlorobenzene is toxic at relatively low concentrations and thus is highly toxic to aquatic organisms (EPA, PBT Chemicals Proposed Rule, January 1999).

Laboratory experiments demonstrate toxic effects on the reproductive system and the central nervous system. Bioaccumulation occurs in both terrestrial and aquatic organisms.

Human exposure to pentachlorobenzene results from consumption of contaminated drinking water or from food, and inhalation of contaminated air. Pentachlorobenzene may adversely affect the kidneys and liver.

Efforts to Reduce Pollution from the Chemical

EPA has taken steps to regulate and reduce pollution from pentachlorobenzene. It has been included on the RCRA Waste Minimization PBT Chemical List. In Michigan, as in several other Great Lakes states, pentachlorobenzene has been included in a state pollution prevention action plan.

TETRABROMOBISPHENOL A

Introduction

Tetrabromobisphenol A (C6H2Br2OH)2C(CH3)2 (CAS 79-94-7), otherwise known as TBBPA, is a white, crystalline powder that is soluble in methanol and ether. TBBPA is a brominated flame retardant and is often used in plastics and engineering resins for printed circuit boards and computer equipment (EPA EA, 1999).

Sources and Uses

TBBPA is used as a flame retardant. It is used in polymers, such as acrylonitrile-butadiene-styrene (ABS), epoxy and polycarbonate resins, high-impact polystyrene, phenolic resins, adhesives, unsaturated polyester resins, thermoplastic polyesters, and as a replacement for octa-diphenyl-oxide in styrenics.

TBBPA is primarily used as a reactive flame retardant and is often used in electronic equipment, particularly printed circuit boards (EPA EA, 1999). In this form, it is covalently bound to a polymer backbone to produce an oligomer (a polymer that consists of two, three, or four monomers) that is flame retardant When used as an additive flame retardant, TBBPA is mixed with various polymers, but does not react chemically with them. In this form it is used in televisions, VCRs, computer wire and cable, automotive components, TV cabinets, structural cases for electrical and electronic devices, and other thermoplastics (EPA EA, 1999). In these applications TBBPA retains its chemical identity.

Chemical Characteristics

Persistence and Bioaccumulation

TBBPA has persistence half-life values in soil of 44 to 179 days, persistence half-life values in water of 48 to 84 days, and persistence half-life values in air of 1 to 9 days (EPA, PBT Chemicals Final Rule, October 1999).

TBBPA has a BCF values of 780, 1,200, and 3,200. (EPA, PBT Chemicals Final Rule, October 1999).

Environmental Fate and Transport

The majority of objects treated with TBBPA are disposed of in landfills or incinerators. Because of its low water solubility, TBBPA binds to sediment and organic matter in the soil. In aquatic environments, TBBPA binds to bottom sediment or particulate matter in the water column. In soil and aquatic systems, TBBPA is partly degraded under both aerobic and anaerobic conditions (International Programme on Chemical Safety, 1995).

Health and Environmental Effects

Ecotoxicity studies on fish, daphnids, shrimp, oysters, and algae have shown acute toxicity values for TBBPA. The values indicate that TBBPA is toxic at relatively low concentrations and thus is highly toxic to aquatic organisms (EPA, PBT Chemicals Proposed Rule, January 1999).

Laboratory studies have not indicated extremely high toxicity, although decreased body weight, increased spleen weight, and reduced concentration of red blood cells, serum proteins, and serum triglyceride have been observed (International Programme on Chemical Safety, 1995). Limited studies, especially those with human subjects, have been conducted to evaluate the chemical's health effects.

Efforts to Reduce Pollution from the Chemical

Currently, there are very few initiatives to reduce pollution from TBBPA. However, it is recognized that in order to reduce pollution from TBBPA, it must be used correctly and effluents containing TBBPA must be addressed appropriately. In addition, disposal of discarded TBBPA wastes and TBBPA-containing products must be monitored to minimize environmental contamination with this substance and its breakdown products. Incineration of TBBPA-containing materials must take place in equipment with appropriate pollution prevention controls (International Programme on Chemical Safety, 1995).

2000 TRI DATA FOR OTHER PBT CHEMICALS

On-site and Off-site Releases

As shown in Table 3-40, there were 172 TRI forms submitted for 2000 for these PBT chemicals: hexachlorobenzene, octachlorostyrene, pentachlorobenzene and tetrabromobisphenol A (TBBPA). On- and off-site releases for these PBT chemicals totaled 838,914 pounds. Tetrabromobisphenol A had the largest releases of this group, with 797,476 pounds or 95.1 percent of the total releases for these PBT chemicals. Releases of hexachlorobenzene, the chemical with the most number of forms and the second largest releases of these PBT chemicals, were 37,527 pounds (4.5 percent of the total). Pentachlorobenzene followed with 3,326 pounds and octachlorostyrene had 585 pounds.

Off-site releases (transfers to disposal) were the largest type of release for these PBT chemicals, accounting for 65.7 percent of total releases, or 551,362 pounds (see Figure 3-16). Other on-site land releases (that is, other than RCRA subtitle C landfills) were the second largest type of release, accounting for 24.5 percent of total releases or 205,422 pounds. (Types of on-site land releases are described in Box 1-4 in Chapter 1.) Air emissions totaled 63,976 pounds or 7.6 percent of total releases for these PBT chemicals. Surface water discharges and underground injection of these PBT chemicals totaled less than 600 pounds.

For tetrabromobisphenol A (TBBPA), off-site releases were 537,549 pounds, representing 67.4 percent of the total releases for this chemical. Another 197,529 pounds or 24.8 percent were other

on-site land releases (that is, other than RCRA subtitle C landfills) and 62,387 pounds or 7.8 percent were air emissions.

Hexachlorobenzene's releases of 37,527 pounds were divided between 16,955 pounds of on-site land releases to RCRA subtitle C landfills (45.2 percent of the total releases for the chemical), 13,021 pounds of off-site releases (transfers to disposal) (34.7 percent of this chemical's total releases total), and 5,745 pounds of other on-site land releases (15.3 percent of the total releases for the chemical).

Pentachlorobenzene's releases were also mainly of these types of releases, with 2,000 pounds of other on-site land releases (that is, other than RCRA subtitle C landfills) representing 60.1 percent of the chemical's total releases, 623 pounds to RCRA subtitle C landfills (18.7 percent of the chemical's total releases) and 355 pounds of off-site releases (transfers to disposal) (10.7 percent of the chemical's total releases).

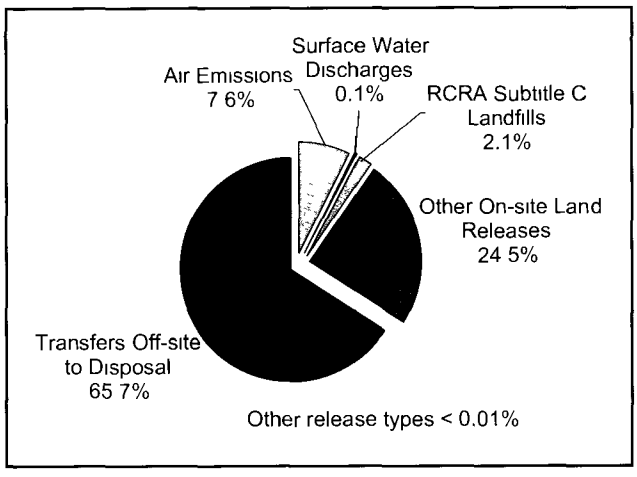
Three-quarters (437 pounds out of 535 pounds) of the total releases of octachlorostyrene were off-site releases (transfers to disposal). The other releases of octachlorostyrene were other on-site land releases (that is, other than RCRA subtitle C landfills).

Waste Management Data

Quantities of TRI Chemicals in Waste

Production-related waste of these PBT chemicals totaled 7.6 million pounds in 2000, as shown in Table 3-41. Much (6.5 million pounds or 85.7 percent) of the total production-related waste was treated on-site (see Figure 3-17). Another 11.1 percent (839,475 pounds) was released on- and off-site.

Figure 3-16: Distribution of TRI On-site and Off-site Releases, 2000: Other PBT Chemicals



Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

Hexachlorobenzene accounted for 6.4 million pounds or 84.8 percent of the production-related waste of these PBT chemicals. Most was treated on-site. The 6.2 million pounds of hexachlorobenzene treated on-site represented 95.6 percent of total production-related waste of hexachlorobenzene in 2000.

There were 804,166 pounds of production-related

Table 3-40: TRI On-site and Off-site Releases, 2000: Other PBT Chemicals

			On-site Releases							Off-site Releases	
					Underground Injection		On-site Land Releases				
CAS Number	Chemical	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
		Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
118-74-1	Hexachlorobenzene	100	1,426 24	331 44	48 37	0 02	16,955 00	5,745 20	24,506 26	13,021 04	37,527 30
29082-74-4	Octachlorostyrene	4	0 00	0 00	0 00	0 00	0 00	148 30	148 30	436 90	585 20
608-93-5	Pentachlorobenzene	20	162 54	173 85	11 90	0 00	623 20	1,999 60	2,971 09	355 00	3,326 09
79-94-7	Tetrabromobisphenol A	48	62,387 41	10 00	0 00	0 00	0 00	197,529 00	259,926 41	537,549 30	797,475 71
Total		**172**	**63,976.18**	**515.29**	**60.27**	**0.02**	**17,578.20**	**205,422.10**	**287,552.06**	**551,362.24**	**838,914.30**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

waste of tetrabromobisphenol A (TBBPA) reported for 2000. Almost 97.9 percent (787,143 pounds) of this was released on- and off-site.

The total production-related waste of pentachlorobenzene was 347,425 pounds, with 342,267 pounds treated on-site. On-site treatment accounted for 98.5 percent of total production-related waste of pentachlorobenzene in 2000.

There were 604 pounds of production-related waste of octachlorostyrene reported for 2000. Most (585 pounds) of it was released on- and off-site.

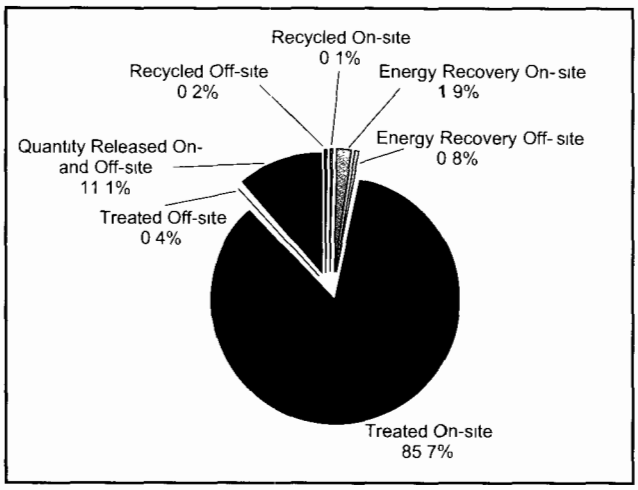
Transfers Off-site for Further Waste Management/Disposal

Transfers off-site for further waste management and disposal of these PBT chemicals totaled almost 679,581 pounds in 2000 (see Table 3-42). Transfers to disposal accounted for 82.7 percent of the transfers for further waste management and disposal (see Figure 3-18). Transfers to energy recovery accounted for 8.6 percent and transfers to treatment for 6.6 percent.

Transfers off-site for further waste management and disposal of tetrabromobisphenol A (TBBPA) totaled 546,096 pounds for 2000, over 98.4 percent of which was off-site transfers to disposal.

For hexachlorobenzene, transfers off-site for further waste management and disposal were 130,882 pounds. Such transfers consisted of 56,586 pounds (43.2 percent) of transfers to energy recovery, 36,956 pounds (28.2 percent) of transfers to treatment, 23,908 pounds (18.3 percent) of other transfers to disposal, and 13,421 pounds (10.3 percent) of transfers to recycling.

Figure 3-17: Quantities of TRI Chemicals in Waste, 2000: Other PBT Chemicals



Note: Data are from Section 8 of Form R

Transfers off-site for further waste management and disposal of pentachlorobenzene totaled 2,147 pounds with 64.8 percent as transfers to treatment. The 456 pounds of transfers off-site for further waste management and disposal of octachlorostyrene were mostly (95.8 percent) other transfers to disposal.

TRI Data by State

Facilities in Louisiana and Texas, with 15 forms each, submitted the largest number of forms in 2000 for these PBT chemicals. Two states, Alabama and California, each had 12 forms. All other states had less than 9 forms.

Table 3-41: Quantities of TRI Chemicals in Waste Managed, 2000: Other PBT Chemicals

CAS Number	Chemical	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-production-related Waste Managed Pounds
118-74-1	Hexachlorobenzene	6,000.50	12,039.00	140,662 00	56,585 00	6,154,926 17	19,461 15	48,420.58	6,438,094 40	21,752 30
29082-74-4	Octachlorostyrene	0 00	0 00	0 00	0 00	19 00	0 00	585 20	604 20	0 00
608-93-5	Pentachlorobenzene	40 00	401.00	0 00	0 00	342,267 00	1,390 81	3,326 28	347,425 09	2 35
79-94-7	Tetrabromobisphenol A	565 00	10 00	0 00	1,849 00	6,962 00	7,637 00	787,143 11	804,166 11	0 00
	Total	**6,605.50**	**12,450.00**	**140,662.00**	**58,434.00**	**6,504,174.17**	**28,488.96**	**839,475.17**	**7,590,289.80**	**21,754.65**

Note: Data are from Section 8 of Form R

On- and Off-site Releases

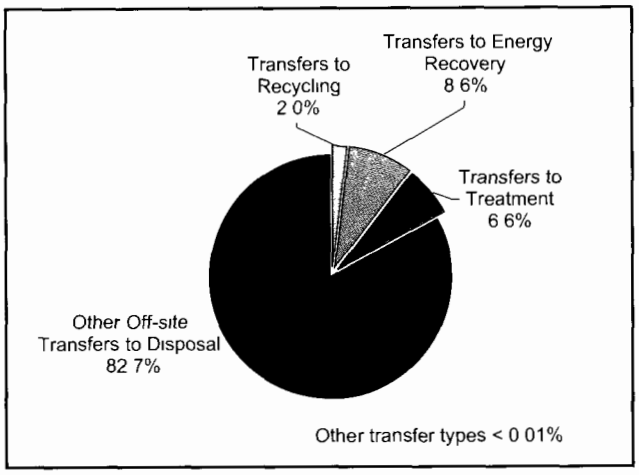
In 2000, facilities in Arkansas reported the largest total on- and off-site releases of these PBT chemicals (see Table 3-43). They reported a total of 749,534 pounds, or 89.3 percent of the total for 2000. South Carolina reported the second largest amount with 20,747 pounds, which was 2.5 percent of the total. Three other states, New York, Pennsylvania, and Louisiana, each had over 10,000 pounds of total releases of these PBT chemicals.

Arkansas' releases consisted of off-site releases (transfers to disposal), other on-site land releases (that is, other than RCRA subtitle C landfills), and air emissions. Off-site releases from Arkansas facilities represented 67.6 percent of total releases in Arkansas, other on-site land releases were 24.8 percent, and air emissions were 7.6 percent.

South Carolina facilities reported 20,747 pounds of total releases, over half of which was off-site releases (transfers to disposal of 10,712 pounds) and almost half was other on-site land releases (land releases to other than RCRA subtitle C landfills of 10,035 pounds).

As shown in Map 3-6, releases of these PBT chemicals were concentrated in Arkansas with 749,534 pounds. Four other states, South Carolina, New York, Pennsylvania and Louisiana, reported more than 10,000 pounds but less than 25,000 pounds of total releases.

Figure 3-18: Distribution of TRI Transfers Off-site for Further Waste Management/Disposal, 2000: Other PBT Chemicals



Note. Total Transfers Off-site for Further Management/Disposal are from Section 6 of Form R

Waste Management Data

The states with the largest quantity of total production-related waste of these PBT chemicals in 2000 were Louisiana and Texas (see Table 3-43). Louisiana reported 3.1 million pounds of total production-related waste and accounted for 41.3 percent of the total for these PBT chemicals. Texas reported 3.0 million pounds and accounted for 39.8 percent of the total. Arkansas ranked third with 801,611 pounds (10.6 percent of the total).

Both Louisiana and Texas reported most of their production-related waste of these PBT chemicals as

Table 3-42: TRI Transfers Off-site for Further Waste Management/Disposal, 2000: Other PBT Chemicals

CAS Number	Chemical	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs: Metals and Metal Compounds Pounds	Transfers to POTWs: Non-metal TRI Chemicals Pounds	Other Off-site Transfers* Pounds	Other Off-site Transfers to Disposal** Pounds	Total Transfers for Further Waste Management/ Disposal Pounds
118-74-1	Hexachlorobenzene	13,421 00	56,586 00	36,956 28	0.00	10.66	0 00	23,908.04	130,881 98
29082-74-4	Octachlorostyrene	0 00	0 00	19 00	0 00	0 00	0 00	436 90	455 90
608-93-5	Pentachlorobenzene	401 00	0 00	1,390.81	0 00	0 00	0.00	355 00	2,146.81
79-94-7	Tetrabromobisphenol A	0 00	1,829 00	6,716 79	0 00	1 00	0 00	537,549 30	546,096 09
	Total	**13,822.00**	**58,415.00**	**45,082.88**	**0.00**	**11.66**	**0.00**	**562,249.24**	**679,580.78**

Note: Total Transfers Off-site for Further Management/Disposal are from Section 6 of Form R

* Other Off-site Transfers are transfers reported without a valid waste management code
** Does not include transfers to POTWs of metals and metal compounds

Table 3-43: Summary of TRI Information by State, 2000: Other PBT Chemicals

		On-site Releases							Off-site Releases	
				Underground Injection		On-site Land Releases				
State	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
	Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
Alabama	12	1,136.04	0.00	0 00	0.00	1,349 00	0.00	2,485 04	22.00	2,507 04
Arizona	2	2 00	0 00	0 00	0 00	0 00	0 00	2 00	268 00	270 00
Arkansas	8	57,227.00	0 00	0.00	0 00	0.00	185,598.00	242,825.00	506,709.00	749,534.00
California	12	158 51	0 01	0 00	0 00	610.00	0 00	768 52	399 00	1,167 52
Colorado	2	0 00	0.00	0 00	0.00	0 00	0.00	0.00	0.00	0.00
Connecticut	3	6 30	0 00	0 00	0 00	0 00	0 00	6 30	263 40	269 70
Delaware	6	2.10	58.50	0.00	0 00	0.00	0.00	60.60	1,943.90	2,004.50
Florida	2	12 00	0 00	0 00	0 00	0 00	0 00	12 00	601 00	613 00
Georgia	3	15.00	0.00	0.00	0 00	0 00	0.00	15.00	0.00	15.00
Illinois	8	285.00	0 00	0 47	0 00	0 00	0 00	285 47	5 00	290 47
Indiana	4	250.10	10.00	0.00	0 00	0.00	0.00	260.10	1,200.00	1,460.10
Iowa	2	60 00	0 00	0 00	0 00	0 00	0 00	60 00	0 00	60 00
Kansas	1	0.00	0.00	8.00	0.00	0.00	0.00	8.00	0 00	8 00
Kentucky	3	0 11	0 00	0 00	0 00	0 00	0 00	0 11	0 18	0 29
Louisiana	15	350 45	18.21	0.00	0.00	11,000.00	42 90	11,411.56	510.50	11,922.06
Maryland	2	0 00	0 70	0 00	0 00	0 00	139 30	140 00	0 00	140 00
Massachusetts	1	0 00	0.00	0 00	0 00	0.00	315 00	315.00	315.00	630.00
Michigan	5	76 20	0 00	0 00	0 00	2,029 00	0 00	2,105 20	116 00	2,221 20
Minnesota	3	0.00	0.00	0.00	0 00	0.00	0.00	0.00	0.00	0.00
Mississippi	6	1 40	86 20	23 80	0 00	0 00	4,263 90	4,375 30	0 00	4,375 30
Missouri	2	16.00	0.00	0 00	0 00	0 00	0 00	16.00	0.00	16.00
Montana	1	10 80	0 00	0 00	0 00	0 00	0 00	10 80	0 00	10 80
Nebraska	1	1 00	0 00	0.00	0 00	0.00	0.00	1 00	0.00	1.00
New Hampshire	1	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
New Jersey	4	124 88	12.00	0 00	0 00	0.00	0 00	136.88	3.00	139 88
New York	5	60 52	0 30	0 00	0 00	0 00	0 00	60 82	14,490 70	14,551 52
North Carolina	2	0 00	0 00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ohio	7	13 57	0 00	0 00	0 00	0 00	0 00	13 57	673 20	686 77
Oregon	6	0 00	0.00	0.00	0 00	2,336.00	0 00	2,336.00	32.80	2,368.80
Pennsylvania	6	2,790 31	0 07	0 00	0 00	0 00	0 00	2,790 38	9,769 00	12,559 38
South Carolina	4	0.00	0 00	0.00	0.00	0.00	10,035.00	10,035.00	10,712 00	20,747.00
Tennessee	7	88.40	277 00	0 00	0 00	0 00	2,836 00	3,201 40	0 00	3,201 40
Texas	15	357.50	52.30	28.00	0.02	254 20	0.00	692.02	1,208.00	1,900.02
Utah	4	0 00	0 00	0 00	0 00	0 00	611 00	611 00	75 56	686 56
Washington	5	930.00	0 00	0 00	0.00	0.00	0.00	930.00	464.00	1,394.00
West Virginia	1	1 00	0 00	0 00	0 00	0 00	0 00	1 00	0 00	1 00
Wisconsin	1	0.00	0 00	0.00	0.00	0 00	1,581.00	1,581.00	1,581.00	3,162.00
Total	**172**	**63,976.18**	**515.29**	**60.27**	**0.02**	**17,578.20**	**205,422.10**	**287,552.06**	**551,362.24**	**838,914.30**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

treated on-site. Over 3.0 million pounds (96.0 percent) of Louisiana's production-related waste was treated on-site, and almost 3.0 million pounds (99.0 percent) of production-related waste in Texas was.

Arkansas reported the largest quantity released on- and off-site, with 751,969 pounds, which was 93.8 percent of total production-related waste for Arkansas in 2000 for these PBT chemicals.

TRI Data by Industry (2-digit SIC Code)

On- and Off-site Releases

Only nine industry sectors reported releases of these PBT chemicals in 2000. The chemical manufacturing sector reported the largest total releases of any industry sector, with 765,445 pounds or 91.2 percent of the total releases (see Table 3-44). Two-thirds (512,291 pounds) of the releases for the chemicals industry were off-site releases (transfers to disposal). One-quarter (192,880 pounds) of the releases for the chemicals industry were other on-site land releases (that is, other than RCRA subtitle C landfills). Almost 59,476 pounds of air emissions of these PBT chemicals were reported by the chemicals industry, accounting for 7.8 percent of total releases for this industry.

Table 3-43: Summary of TRI Information by State, 2000: Other PBT Chemicals (continued)

State	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site	Total Production-related Waste Managed	Non-production-related Waste Managed
	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Pounds	Pounds	Pounds
Alabama	0 10	0.00	0 00	10.10	0.00	973.20	2,505.00	3,488.40	0.30
Arizona	0 00	0 00	0 00	345 00	0 00	1,500 00	270 00	2,115 00	0 00
Arkansas	0.00	0 00	11,600 00	12.00	36,382.00	1,648 00	751,969 22	801,611.22	0 00
California	6,000 00	0 00	0 00	56,527 00	2,100 00	192 00	1,152 52	65,971 52	0 00
Colorado	0.00	1,300 00	0.00	0 00	0 00	0 00	0.00	1,300.00	0.00
Connecticut	565 00	10 00	0 00	10 00	0 00	10 00	267 40	862 40	1 00
Delaware	40 00	0 00	0 00	0.00	0 00	0.00	2,004.50	2,044.50	0.00
Florida	0 00	0 00	0 00	0 00	0 00	1,964 00	613 00	2,577 00	0 00
Georgia	0 30	0 00	0.00	0.00	2 00	0.00	15 00	17 30	0 00
Illinois	0 00	0 00	0 00	109 00	975 00	98 00	290 47	1,472 47	0 00
Indiana	0.00	0.00	17,913 00	46 90	90 00	0.00	1,544 10	19,594.00	0.00
Iowa	0 00	0 00	0.00	0 00	0 00	1 00	60 00	61 00	0 00
Kansas	0 00	0 00	0.00	0 00	0 00	22.00	8.00	30.00	0.00
Kentucky	0 00	2 00	0 00	0 00	893 30	16 00	0 29	911 59	0 00
Louisiana	0.10	0.00	110,000 00	0.00	3,008,256.00	4,232 92	11,419 05	3,133,908.07	12.55
Maryland	0 00	0 00	0 00	0 00	0 00	0 00	140 00	140 00	0 00
Massachusetts	0.00	0.00	0 00	0.00	0 00	0 00	315.00	315.00	0 00
Michigan	0 00	0 00	0 00	0 00	81 00	18 02	2,220 90	2,319 92	0 00
Minnesota	0 00	0.00	0.00	0 00	7.00	5.00	0 00	12 00	0.00
Mississippi	0 00	0 00	0 00	0 00	0 00	0 20	4,375 30	4,375 50	0 00
Missouri	0.00	0 00	0 00	0.00	0 00	640.00	16 00	656 00	0 00
Montana	0 00	0 00	0 00	0 00	0 00	0 00	10.80	10 80	0 00
Nebraska	0 00	0 00	0.00	0 00	8,327.00	0.00	1 00	8,328.00	0.00
New Hampshire	0 00	0 00	0 00	0 00	0 00	2,988 00	0 00	2,988 00	0 00
New Jersey	0.00	0 00	0 00	0.00	102,389.00	2,984.00	138.88	105,511.88	0.00
New York	0 00	0 00	0 00	1,374 00	226 00	0 00	14,569 72	16,169 72	21,700 00
North Carolina	0 00	0.00	0.00	0 00	0 00	0.10	0 10	0 20	0 00
Ohio	0 00	0 00	0 00	0 00	236,061 00	3 00	691 77	236,755 77	0 00
Oregon	0.00	0 00	0.00	0.00	0 00	66.92	2,368.80	2,435.72	0.00
Pennsylvania	0 00	0 00	0 00	0 00	603 00	107 00	12,549 00	13,259 00	0 00
South Carolina	0 00	0.00	0.00	0 00	0.00	0.10	10,712 00	10,712 10	0 00
Tennessee	0 00	0 00	0 00	0 00	113,272 00	4,832 00	3,201 40	121,305 40	0 00
Texas	0.00	11,138.00	1,149.00	0.00	2,991,094 00	5,572 40	12,788 40	3,021,741 80	40.80
Utah	0 00	0 00	0 00	0 00	3,415 87	210 00	686 56	4,312 43	0 00
Washington	0 00	0.00	0 00	0 00	0.00	405.10	989 00	1,394.10	0.00
West Virginia	0 00	0 00	0 00	0 00	0 00	0 00	1 00	1 00	0 00
Wisconsin	0 00	0 00	0.00	0 00	0 00	0 00	1,581.00	1,581 00	0.00
Total	**6,605.50**	**12,450.00**	**140,662.00**	**58,434.00**	**6,504,174.17**	**28,488.96**	**839,475.17**	**7,590,289.80**	**21,754.65**

Note: Data are from Section 8 of Form R

The electrical equipment industry had the second largest total releases, with 27,850 pounds of total releases. Off-site releases (transfer to disposal) accounted for 57.1 percent (15,915 pounds) of total releases of the electrical equipment industry. This sector also reported 11,931 pounds of other on-site land releases (that is, other than RCRA subtitle C landfills), representing 42.8 percent of total releases of the electrical equipment industry.

The hazardous waste/solvent recovery industries reported the third largest amount of total releases, with 17,751 pounds, and the largest on-site land releases to RCRA subtitle C landfills, with 17,324 pounds. On-site land releases to RCRA subtitle C landfills accounted for 97.6 percent of releases to RCRA subtitle C landfills of these PBT chemicals by the hazardous waste/solvent recovery industries in 2000.

Waste Management

The chemical manufacturing industry reported the largest amount of total production-related waste of these PBT chemicals in 2000 (see Table 3-44). With 7.0 million pounds of production-related waste, this industry sector accounted for 91.8 percent of all production-related waste of these PBT chemicals.

Map 3-6: Total On- and Off-site Releases, 2000: Other PBT Chemicals

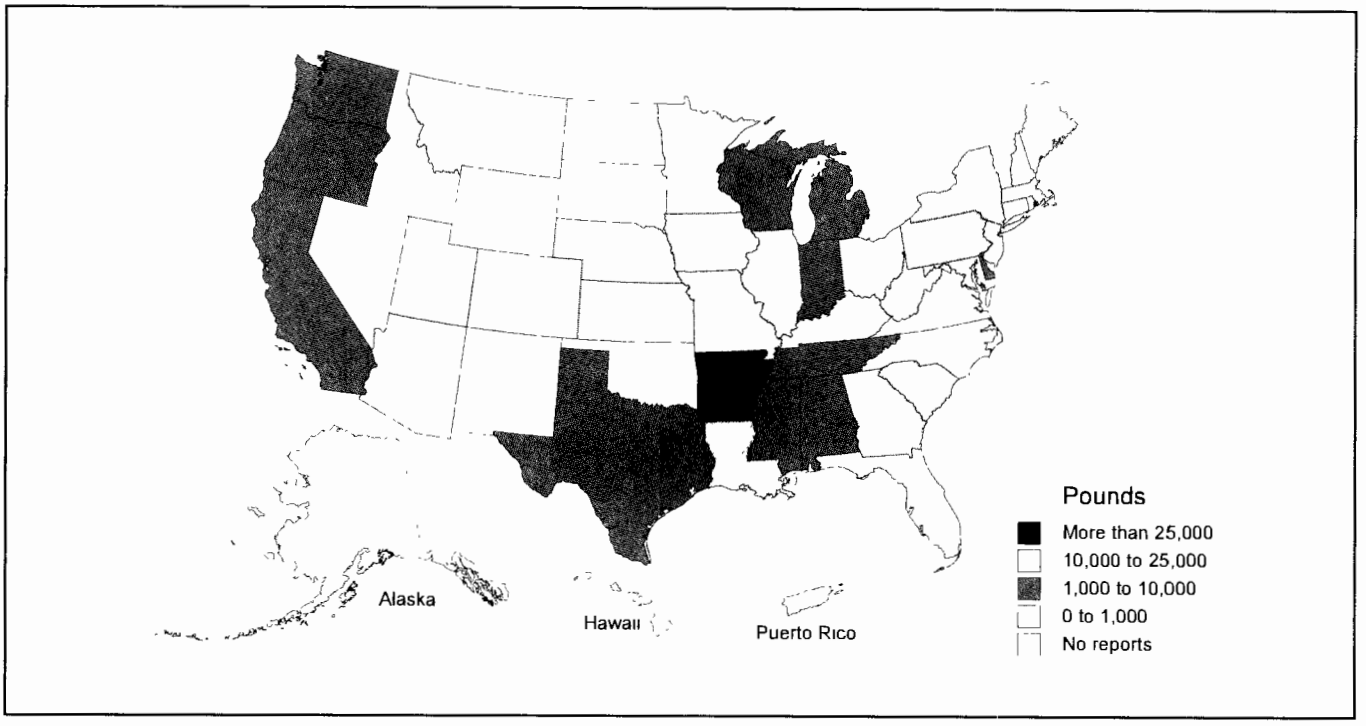


Table 3-44: Summary of TRI Information by Industry, 2000: Other PBT Chemicals

			On-site Releases							Off-site Releases	
					Underground Injection		On-site Land Releases				
SIC Code	Industry	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
		Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
24	Lumber	23	0 00	0 00	0 00	0.00	0 00	0.00	0.00	0.00	0.00
28	Chemicals	71	59,475 76	511 85	32 27	0 02	254 20	192,880 10	253,154 20	512,291 00	765,445 20
30	Plastics	13	2,893.40	0.00	0 00	0 00	0 00	0.00	2,893.40	12,666 70	15,560.10
32	Stone/Clay/Glass	2	1 10	0 00	0 00	0 00	0 00	0 00	1 10	0 00	1 10
33	Primary Metals	6	243.00	0 00	0.00	0 00	0 00	611 00	854 00	32.80	886 80
36	Electrical Equip	8	4 31	0 00	0 00	0 00	0 00	11,931 00	11,935 31	15,915 00	27,850 31
37	Transportation Equip.	4	933.50	0 00	0.00	0.00	0.00	0.00	933 50	464 00	1,397 50
	Multiple codes 20-39	8	164 50	0 00	0 00	0 00	0 00	0 00	164 50	0 00	164 50
	No codes 20-39	2	71.00	0 00	0 00	0 00	0 00	0.00	71 00	0 00	71 00
	Subtotal Original Industries	**137**	**63,786.56**	**511.85**	**32.27**	**0.02**	**254.20**	**205,422.10**	**270,007.00**	**541,369.50**	**811,376.50**
491/493	Electric Utilities	10	131 48	0 08	0.00	0.00	0 00	0.00	131 56	9,655 00	9,786.56
4953/7389	Hazardous Waste/Solvent Recovery	25	58 14	3 36	28 00	0 00	17,324 00	0 00	17,413 50	337 74	17,751 24
	Subtotal for New Industries	**35**	**189.62**	**3.44**	**28.00**	**0.00**	**17,324.00**	**0.00**	**17,545.06**	**9,992.74**	**27,537.80**
	Total	**172**	**63,976.18**	**515.29**	**60.27**	**0 02**	**17,578 20**	**205,422.10**	**287,552.06**	**551,362.24**	**838,914.30**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release

Most of the chemicals industry's production-related waste (85.9 percent or 6.0 million pounds) was treated on-site and 11.2 percent (778,311 pounds) was released on- and off-site.

The hazardous waste/solvent recovery industries had the second largest total production-related waste of these PBT chemicals in 2000, with 540,803 pounds. Over 96.3 percent (520,956 pounds) of the hazardous waste/solvent recovery industries' production-related waste was treated on-site. The quantity released on- and off-site accounted for 3.3 percent (17,760 pounds) of these industries' production-related waste.

Three other industry sectors reported about 20,000 pounds of these PBT chemicals in 2000. The stone/clay/glass sector reported 29,561 pounds, mostly as energy recovery on-site. The plastics industry reported 19,394 pounds, primarily released on- and off-site. The electrical equipment industry reported 17,641 pounds, also primarily released on- and off-site.

Projected Quantities of TRI Chemicals Managed in Waste, 2000-2002

TRI facilities expected to decrease their production-related waste of these PBT chemicals between 2000 and 2002 by 1.5 percent, from 7.6 million pounds to 7.5 million pounds (see Table 3-45). The projected decrease was expected to occur primarily from 2000 to 2001, with a 0.9 percent decrease and a projected decrease of 0.6 percent from 2001 to 2002.

The decrease was projected to occur in most types of waste management activity. Treatment on-site (the activity with the largest amounts) was projected to decrease by 1.5 percent from 2000 to 2002. The quantity released on- and off-site (the activity with the second largest amounts) was projected to increase from 2000 to 2002. The expected increase was 0.7 percent. On- and off-site releases are the least-desirable outcome under the waste management hierarchy described in Waste Management in Chapter 1 (Figure 1-2).

Source Reduction

In 2000, 19 forms were filed reporting source reduction activities for these PBT chemicals (see Table 3-46). As noted in Waste Management in Chapter 1, source reduction—an activity that prevents the generation of waste—is the preferred waste management option. These 19 forms represented 11.0 percent of all forms submitted for these these PBT chemicals in 2000.

Table 3-44: Summary of TRI Information by Industry, 2000: Other PBT Chemicals (continued)

		Recycled		Energy Recovery		Treated				
SIC Code	Industry	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-production-related Waste Managed Pounds
24	Lumber	0 50	0 00	0 00	0 10	0 00	1.00	0 10	1.70	0 30
28	Chemicals	6,040 00	12,440 00	111,149 00	56,537 00	5,983,205 00	20,984 34	778,310 89	6,968,666 23	21,754 35
30	Plastics	565.00	0 00	0 00	0 00	1.00	3,232.00	15,595 80	19,393 80	0.00
32	Stone/Clay/Glass	0 00	0 00	29,513 00	46 90	0 00	0 00	1 32	29,561 22	0 00
33	Primary Metals	0 00	0 00	0 00	0 00	0 00	276 62	886 80	1,163.42	0 00
36	Electrical Equip	0 00	0 00	0 00	1,719 00	3 00	0 00	15,919 31	17,641 31	0 00
37	Transportation Equip	0 00	10 00	0 00	10 00	0 00	415 00	990 00	1,425 00	0 00
	Multiple codes 20-39	0 00	0 00	0 00	109 00	9 00	1,505 00	164 50	1,787 50	0 00
	No codes 20-39	0.00	0 00	0 00	0 00	0 00	0 00	71 00	71 00	0 00
	Subtotal New Industries	**6,605.50**	**12,450.00**	**140,662.00**	**58,422 00**	**5,983,218.00**	**26,413 96**	**811,939.72**	**7,039,711.18**	**21,754.65**
491/493	Electric Utilities	0 00	0 00	0 00	0 00	0 00	0 00	9,775.88	9,775 88	0.00
4953/7389	Hazardous Waste/Solvent Recovery	0 00	0 00	0 00	12 00	520,956 17	2,075 00	17,759 58	540,802 75	0 00
	Subtotal New Industries	**0.00**	**0.00**	**0.00**	**12.00**	**520,956.17**	**2,075.00**	**27,535.46**	**550,578.63**	**0.00**
	Total	**6,605 50**	**12,450 00**	**140,662.00**	**58,434.00**	**6,504,174.17**	**28,488.96**	**839,475.17**	**7,590,289.80**	**21,754.65**

Note: Data are from Section 8 of Form R

Table 3-45: Current Year and Projected Quantities of TRI Chemicals in Waste, 2000: Other PBT Chemicals

Waste Management Activity	Current Year 2000 Total Pounds	Current Year 2000 Percent of Total	Projected 2001 Total Pounds	Projected 2001 Percent of Total	Projected 2002 Total Pounds	Projected 2002 Percent of Total
Recycled On-site	6,605.50	0.1	7,382.80	0.1	7,808.80	0.1
Recycled Off-site	12,450.00	0 2	10,472.00	0.1	10,742 00	0.1
Energy Recovery On-site	140,662.00	1.9	137,800.00	1.8	137,800.00	1.8
Energy Recovery Off-site	58,434 00	0.8	46,818 10	0 6	46,821 10	0.6
Treated On-site	6,504,174.17	85.7	6,454,479.87	85.8	6,403,432.87	85.6
Treated Off-site	28,488.96	0 4	25,621 42	0.3	26,970 42	0 4
Quantity Released On- and Off-site	839,475.17	11.1	843,081.87	11.2	845,679.76	11.3
Total Production-related Waste Managed	**7,590,289.80**	**100.0**	**7,525,656.06**	**100.0**	**7,479,254.95**	**100.0**

Waste Management Activity	Projected Change 2000-2001 Percent	Projected Change 2001-2002 Percent	Projected Change 2000-2002 Percent
Recycled On-site	11.8	5.8	18.2
Recycled Off-site	-15.9	2.6	-13 7
Energy Recovery On-site	-2.0	0.0	-2.0
Energy Recovery Off-site	-19.9	0.0	-19 9
Treated On-site	-0.8	-0.8	-1.5
Treated Off-site	-10.1	5.3	-5.3
Quantity Released On- and Off-site	0.4	0.3	0.7
Total Production-related Waste Managed	**-0.9**	**-0.6**	**-1.5**

Note: Current year and projected amounts are from Section 8 of Form R for 2000

The most frequently reported source reduction activity for these PBT chemicals was good operating practices, with 10 forms. Other source reduction activities included process modifications (listed on 7 forms), raw materials modifications (on 5 forms), and spill and leak prevention (on 4 forms).

Table 3-46: Forms Reporting Source Reduction Activity, by Category, 2000: Other PBT Chemicals

CAS Number	Chemical	Total Form Rs Number	Forms Reporting Source Reduction Activity Number	Forms Reporting Source Reduction Activity Percent of All Form Rs Percent	Category of Source Reduction Activity: Good Operating Practices Number	Inventory Control Number	Spill and Leak Prevention Number	Raw Materials Modifications Number	Process Modifications Number	Cleaning and Degreasing Number	Surface Preparation and Finishing Number	Product Modifications Number
118-74-1	Hexachlorobenzene	100	12	12.0	5	2	3	1	4	0	1	0
29082-74-4	Octachlorostyrene	4	0	0 0	0	0	0	0	0	0	0	0
608-93-5	Pentachlorobenzene	20	0	0 0	0	0	0	0	0	0	0	0
79-94-7	Tetrabromobisphenol A	48	7	14 6	5	0	1	4	3	0	0	1
Total		**172**	**19**	**11.0**	**10**	**2**	**4**	**5**	**7**	**0**	**1**	**1**

Note: All source reduction activities on a form are counted in the corresponding category Totals do not equal the sum of the categories because forms may report more than one source reduction activity

TRI Data for Hexachlorobenzene Before 2000

Of these PBT chemicals, only hexachlorobenzene was on the TRI list before 2000. Reporting for hexachlorobenzene before 2000 was based on the higher TRI thresholds of 25,000 pounds for manufacture or processing of the chemical and 10,000 pounds for otherwise using the chemical. For the reporting year 2000, these thresholds were reduced to 10 pounds for manufacture, processing or otherwise using hexachlorobenzene. Lowering the threshold, in effect, adds reports by those facilities whose activities were below the higher threshold. Consequently, the amounts for 2000 are not comparable with those for prior years.

Box 3-8 has TRI data reported for hexachlorobenzene before 2000.

Box 3-8: TRI Data for Hexachlorobenzene Before 2000

Following is a brief summary of releases and transfers and total production-related waste for hexachlorobenzene for 1998 and 1999. This table includes reporting by both original and new industries.

TRI Data for Hexachlorobenzene, 1998-1999

	1998	1999	Change 1998-1999	
	Number	Number	Number	Percent
Forms	17	20	3	17.6
	Pounds	Pounds	Pounds	Percent
On-site Releases	486	13,602	13,116	2,698.8
Off-site Releases (Transfers to Disposal)	13,328	1,506	-11,822	-88.7
Total On- and Off-site Releases	**13,814**	**15,108**	**1,294**	**9.4**
Total Production-related Waste Managed	**1,872,471**	**5,852,454**	**3,979,983**	**212.6**

Hexachlorobenzene have been on the TRI chemical list since the beginning of TRI. The following is a summary of releases and transfers for 1988-1999. This table does not include reporting by new industries for 1998 and 1999 since new industries did not report to TRI before 1998.

TRI Data for Hexachlorobenzene, 1988-1999

	1988	1995	1998	1999	Change 1988-1999	
	Number	Number	Number	Number	Number	Percent
Forms	9	9	12	14	5	55.6
	Pounds	Pounds	Pounds	Pounds	Pounds	Percent
On-site Releases	4,459	7,504	471	590	-3,869	-86.8
Off-site Releases (Transfers to Disposal)	443,541	6,975	13,251	13,550	-429,991	-96.9
Total On- and Off-site Releases	**448,000**	**14,479**	**13,722**	**14,140**	**-433,860**	**-96.8**

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Chapter 4

Toxics Release Inventory Data for New Industries

Chapter 4

Toxics Release Inventory Data for New Industries

This chapter provides analyses of 2000 TRI data, by industry sector, for the seven industries that were required to report to TRI for the first time in 1998. Analyses of TRI reporting by the 20 industries in the manufacturing sector (Standard Industrial Classification codes 20 to 39) that have been required to report to TRI since the program began in 1987 appear in Chapters 2 and 5. Box 4-1 contains an explanation of SIC codes and their use in TRI.

Chapter 1 explains types of releases and other waste management activities and provides important information on factors to be considered when using TRI data.

NEW INDUSTRIES

As noted in Chapter 1 (under **Who Must Report?** and **Facility Expansion**), in 1992 EPA conducted a detailed examination of non-manufacturing industries to determine which sectors release or otherwise manage significant quantities of TRI chemicals in waste. This effort focused, in particular, on sectors linked to manufacturing—those providing energy, supplying raw materials as inputs, further managing products, or further managing waste from the manufacturing sector. As a result, on May 1, 1997 (in 62 FR 23833), EPA expanded TRI by adding seven new industry sectors, beginning in reporting year 1998:

Box 4-1: SIC Codes and Their Use in TRI

Standard Industrial Classification (SIC) codes are used throughout the federal government to classify economic activity by industry. Facilities in the manufacturing sectors—that is, SIC codes 20 through 39—have been required to report releases since the TRI program began. Federal facilities have been required to report to TRI since 1994, regardless of their SIC code. In 1998, seven additional industries began reporting.

On TRI Form Rs and on TRI Form A certification statements, facilities report the four-digit SIC codes that define their operations. A facility might report, for example, SIC code 2873, nitrogenous fertilizers. Industries are grouped into broader categories at the three-digit and two-digit SIC code levels. For example, at the two-digit level the category nitrogenous fertilizers is in the agricultural chemicals group, SIC code 287, and at the two-digit level it falls into the chemicals and allied products major group, SIC code 28. Producers of nitrogenous fertilizers have been required to report to TRI since 1987. A facility that mines silver ore (SIC code 1044, in the gold and silver ores group SIC code 104, in the metal mining major group SIC code 10) was required to report to TRI beginning in 1998. A solvent recovery facility in SIC code 7389 was also required to report beginning in 1998, although other types of economic activity in that SIC code (miscellaneous business services) do not report to TRI.

Tables in this report present data only for the SIC codes—and the economic activities within those codes— that are specifically required to report to TRI.

Industrial facilities often conduct interrelated operations resulting in products or services that are classified in different SIC codes. In general, TRI forms with multiple SIC codes are analyzed in Chapter 5. (Box 5-2 explains the treatment of multiple codes.) If, however, a facility reported for the first time in 1998 with SIC codes for both new and original industries, it is included in the analyses in Chapter 4 under the new industry code.

- Metal mining (SIC code 10, except 1011, 1081, and 1094),
- Coal mining (SIC code 12, except 1241),
- Electric utilities that combust coal and/or oil (SIC codes 4911, 4931, and 4939),
- RCRA subtitle C hazardous waste treatment and disposal facilities (in SIC code 4953),
- Chemical wholesale distributors (SIC code 5169),
- Petroleum terminals and bulk storage facilities (SIC code 5171), and
- Solvent recovery services (in SIC code 7389).

Information and TRI data for RCRA subtitle C hazardous waste treatment and disposal facilities (in SIC code 4953) and solvent recovery services (in SIC code 7389) are presented together because of their similarity.

Chapter 2 presents a comparison of the reporting by the new industries with that of the original industries. In this chapter, total releases include all transfers to disposal as reported by the subset of TRI facilities that reported within the new industry sectors. In Chapter 2, when presenting reporting by all TRI facilities, total releases on- and off-site do not include transfers to disposal sent to other TRI facilities that reported the amount as an on-site release. Some TRI facilities transfer off-site chemicals in waste to other TRI facilities for disposal on-site. When comparing all TRI facilities, such transfers are omitted to avoid counting the amounts twice, once as a transfer and once as an on-site release. (See Box 1-8 in Chapter 1 and Box 2-1 in Chapter 2 for an explanation and calculation of this duplication of off-site transfers to disposal.) Most of these transfers are from manufacturing facilities in the original industry sectors to hazardous waste facilities, a new industry sector. Therefore, such transfers are not omitted in the separate analyses of the new industries in this chapter.

TRI DATA BY INDUSTRY, 2000

In 2000, a total of 2,132 facilities in the new TRI industries submitted 17,382 forms, comprising 14,731 Form Rs and 2,651 Form As, as shown in Table 4-1. The electric utilities industry submitted the largest number of total forms, 6,210. The petroleum terminals/bulk storage industry ranked second, with 4,096 forms, followed by the chemical wholesale distributors industry, with 3,446 forms. Together, these three industries submitted 79.1 percent of the forms for 2000 from the new industries covered by TRI.

On- and Off-site Releases, 2000

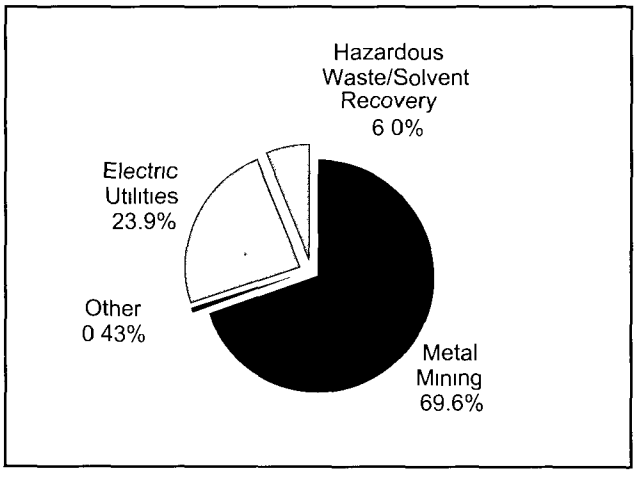
On- and off-site releases by the new industries totaled just over 4.82 billion pounds in 2000. Of that total, the metal mining and electric utilities industries contributed 93.6 percent. As shown in Table 4-2, the metal mining industry reported 3.36 billion pounds of total on- and off-site releases, and the electric utilities industry reported 1.16 billion pounds. These amounts represented 69.6 percent and 23.9 percent, respectively, of all on- and off-site

Table 4-1: TRI Facilities and Forms, New Industries, by Industry, 2000

SIC Code	Industry	Total Facilities Number	Total Forms Number	Form Rs Number	Form As Number
10	Metal Mining	97	678	655	23
12	Coal Mining	81	271	203	68
491/493	Electric Utilities	706	6,210	6,038	172
5169	Chemical Wholesale Distributors	467	3,446	1,871	1,575
5171	Petroleum Terminals/Bulk Storage	566	4,096	3,499	597
4953/7389	Hazardous Waste/Solvent Recovery	215	2,681	2,465	216
	Total	**2,132**	**17,382**	**14,731**	**2,651**

Note: Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

Figure 4-1: TRI On-site and Off-site Releases, New Industries, by Industry, 2000



Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

releases reported by the new industries, as illustrated in Figure 4-1. The hazardous waste/solvent recovery industries ranked a distant third, with 289.1 million pounds (6.0 percent) of total on- and off-site releases.

On-site land releases accounted for 79.3 percent (3.83 billion pounds) of the total on- and off-site releases for all new industries combined in 2000. Most on-site land releases (86.7 percent) came from the metal mining industry, which reported 3.32 billion pounds of on-site land releases. (Types of on-site land releases are described in Box 1-4 in Chapter 1.)

The next most common source of releases came from air releases in the electric utilities industry, which accounted for 787.8 million pounds of air emissions, or 16.3 percent of the total on- and off-site releases for all new industries. The electric utilities industry also accounted for 288.9 million pounds of on-site land releases and reported the largest surface water discharges of all new industry sectors, 4.2 million pounds.

The hazardous waste/solvent recovery industries reported the third largest total on- and off-site releases of the new industry sectors, with 280.1 million pounds. Most of this was on-site land releases to RCRA subtitle C landfills, 196.0 million pounds.

Coal mines reported 16.0 million pounds of total releases, with 13.8 million pounds of on-site land releases and 1.2 million pounds of air emissions. Petroleum terminals and bulk storage facilities reported 3.9 million pounds of total releases, with 3.4 million pounds of air emissions. Chemical wholesale distributors also reported mostly air emissions, with 1.4 million pounds of air emissions out of 1.6 million pounds of total on- and off-site releases.

Figure 4-2 displays the distribution of on- and off-site releases for each of the new industries. Metal mining, coal mining and hazardous waste/solvent recovery reported most of their releases as on-site land releases. On-site land releases were 98.8 percent of their total releases for metal mining, 86.6 percent for coal mining and 71.8 percent for hazardous waste/solvent recovery. On the other hand, the other three new industry sectors reported most of their releases as on-site air emissions. For electric utilities, air emissions were 68.2 percent of their total releases. For chemical wholesale distributors, air emissions were 84.4 percent of total releases and for petroleum terminals and bulk storage facilities, air emissions were 86.6 percent.

Top 15 Chemicals for On- and Off-site Releases by Industry, 2000

Table 4-3 lists the 15 TRI chemicals with the largest total releases in 2000 reported by the metal mining industry. On- and off-site releases of these top 15 TRI chemicals totaled 3.34 billion pounds, 99.3 percent of the total 3.36 billion pounds for all chemicals in the metal mining industry.

The metal mining industry reported 3.33 billion pounds of total on-site releases of the top 15 chemicals. On-site releases constituted just under 100 percent of the total on- and off-site releases of the top 15 chemicals; nearly 619,800 pounds were reported transferred off-site to disposal. Of the 3.33 billion pounds of total on-site releases, 3.29 billion pounds

Table 4-2: TRI On-site and Off-site Releases, New Industries, by Industry, 2000

SIC Code	Industry	Air: Fugitive or Nonpoint Air Emissions Pounds	Air: Stack or Point Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection: Class I Wells Pounds	Underground Injection: Class II-V Wells Pounds
10	Metal Mining	2,248,967	893,494	492,008	0	37,614,017
12	Coal Mining	1,123,143	60,822	741,153	14,399	208,453
491/ 493	Electric Utilities	314,371	787,505,584	4,206,628	0	0
5169	Chemical Wholesale Distributors	648,971	712,701	4,753	0	0
5171	Petroleum Terminals/Bulk Storage	1,040,998	2,321,185	21,909	0	0
4953/ 7389	Hazardous Waste/Solvent Recovery	359,809	588,387	45,763	33,903,476	0
	Total	**5,736,258**	**792,082,173**	**5,512,215**	**33,917,875**	**37,822,470**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

One facility, Phelps Dodge Miami of Claypool, AZ, that reported under SIC code 33 and SIC code 10 in 2000 and previous years has been included in the new industry category SIC code 10 for the purpose of this analysis

(98.8 percent) were reported in other on-site land releases (that is, other than RCRA subtitle C landfills). Underground injection into Class II-V Wells was the second-most common reported source for these 15 chemicals, constituting 37.6 million pounds, or 1.0 percent of the total on-site releases.

Copper compounds constituted 37.6 percent (1.26 billion pounds) of the 3.36 billion pounds released on- and off-site by metal mines. Zinc compounds accounted for the second largest total releases, with 21.0 percent (705.7 million pounds) of the total. Arsenic compounds were the third, with 13.5 percent (454.1 million pounds) of the total releases for metal mines.

Table 4-4 lists the 15 TRI chemicals with the largest total releases in 2000 reported by the coal mining industry. On- and off-site releases of these top 15 TRI chemicals totaled 15.5 million pounds, 97.3 percent of the total 16.0 million pounds of all chemicals released on- and off-site by the coal mining industry.

The coal mining industry reported 15.5 million pounds of total on-site releases for the top 15 chemicals. No off-site transfers to disposal were reported for these chemicals. Of the 15.5 million pounds of total on-site releases, 13.5 million pounds (86.6 percent) were reported in other on-site land releases (that is, other than RCRA subtitle C landfills). Air emissions were the second most common reported source, constituting 1.1 million pounds, or 7.2 percent of the total on-site releases. Surface water discharges accounted for 4.8 percent (over 740,900 pounds) of the on-site releases.

Barium compounds constituted 32.0 percent (5.1 million pounds) of the 15.9 million pounds released on- and off-site by coal mines. Manganese compounds accounted for the second largest total releases, with 2.4 million pounds or 15.1 percent of the total. Barium was third, with 2.3 million pounds or 14.3 percent of the total. Ammonia constituted 12.6 percent (2.0 million pounds) of the total releases. No other chemical or chemical compound constituted more than 10 percent of the total releases of the coal mining industry.

Table 4-5 lists the 15 TRI chemicals with the largest total releases in 2000 reported by the electric utilities industry. On- and off-site releases of the top 15 TRI chemicals totaled 1.14 billion pounds, 98.6

Table 4-2: TRI On-site and Off-site Releases, New Industries, by Industry, 2000 (continued)

Industry	On-site Land Releases					Total On-site Releases	Off-site Releases	Total On- and Off-site Releases
	RCRA Subtitle C Landfills	Other Landfills	Land Treatment	Surface Impoundments	Other Disposal		Transfers Off-site to Disposal	
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
Metal Mining	0	21,792,594	2,006	886,978,322	2,407,123,486	3,357,144,895	621,752	3,357,766,648
Coal Mining	0	7,785,330	1,921,712	3,120,638	992,332	15,967,981	20	15,968,001
Electric Utilities	1,373,383	143,268,331	2,240,899	137,415,016	4,574,602	1,080,898,816	74,334,647	1,155,233,463
Chemical Wholesale Distributors	0	0	0	0	63,151	1,429,576	183,893	1,613,469
Petroleum Terminals/Bulk Storage	486	0	1,122	101	35,425	3,421,226	460,550	3,881,776
Hazardous Waste/Solvent Recovery	194,611,003	10,730,459	0	2,192,315	18	242,431,230	46,635,855	289,067,085
Total	**195,984,872**	**183,576,714**	**4,165,739**	**1,029,706,394**	**2,412,789,015**	**4,701,293,724**	**122,236,717**	**4,823,530,441**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

One facility, Phelps Dodge Miami of Claypool, AZ, that reported under SIC code 33 and SIC code 10 in 2000 and previous years has been included in the new industry category SIC code 10 for the purpose of this analysis

percent of the total 1.16 billion pounds of all chemicals released on- and off-site by the electric utilities industry.

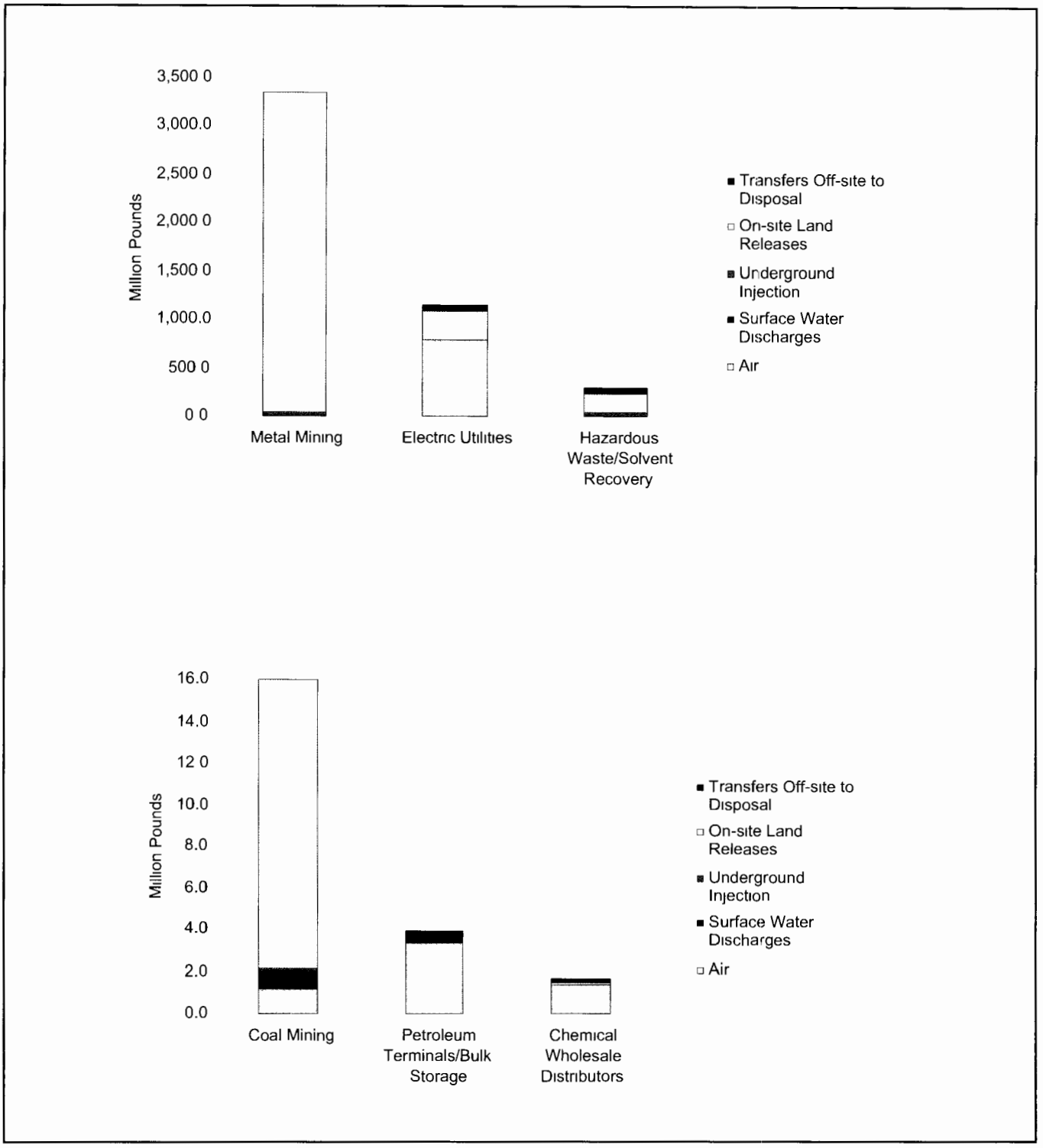
The electric utilities industry reported 1.07 billion pounds of total on-site releases of the top 15 chemicals, representing 93.9 percent of the total on- and off-site releases of these top 15 chemicals. Transfers off-site to disposal constituted 6.1 percent (69.4 million pounds) of the total on- and off-site releases of the top 15 chemicals. Of the 1.07 billion pounds of total on-site releases, 781.8 million pounds (73.1 percent) were air emissions. Other on-site land releases (that is, other than RCRA subtitle C landfills), were the second-most common reported source, constituting 283.1 million pounds, or 26.5 percent of the total on-site releases. Releases in two other categories—surface water discharges, with 3.0 million pounds, and RCRA Subtitle C landfills, with 1.4 million pounds—were also reported.

Table 4-3: Top 15 Chemicals with Largest On-site and Off-site Releases, 2000: Metal Mining

CAS Number	Chemical	Total Air Emissions	Surface Water Discharges	Underground Injection		On-site Land Releases		Total On-site Releases	Off-site Releases	Total On- and Off-site Releases
				Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases		Transfers Off-site to Disposal	
		Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
--	Copper compounds	127,442	3,767	0	1,300,011	0	1,259,674,891	1,261,106,111	4,174	1,261,110,285
--	Zinc compounds	164,332	25,088	0	22,000,042	0	683,526,085	705,715,547	5,035	705,720,582
--	Arsenic compounds	29,737	4,978	0	1,740,036	0	452,329,034	454,103,785	632	454,104,417
--	Manganese compounds	73,373	80,657	0	1,200,000	0	313,939,515	315,293,545	593,283	315,886,828
--	Lead compounds	159,610	7,162	0	8,300,001	0	299,606,126	308,072,899	5,288	308,078,187
--	Chromium compounds	3,968	255	0	49,000	0	95,924,681	95,977,904	1,028	95,978,932
--	Barium compounds	20,943	27	0	2,000,000	0	63,599,339	65,620,309	9,787	65,630,096
--	Vanadium compounds	1,606	250	0	0	0	43,655,525	43,657,381	0	43,657,381
--	Nickel compounds	8,227	3,212	0	44,005	0	33,440,032	33,495,476	250	33,495,726
--	Antimony compounds	2,275	7,385	0	670,064	0	22,018,570	22,698,294	0	22,698,294
--	Cobalt compounds	1,352	0	0	18,001	0	11,399,763	11,419,116	0	11,419,116
--	Nitrate compounds	260	340,385	0	890	0	4,691,214	5,032,749	5	5,032,754
--	Cadmium compounds	3,070	585	0	110,000	0	4,491,235	4,604,890	271	4,605,161
7440-47-3	Chromium	295	5	0	0	0	4,018,254	4,018,554	0	4,018,554
--	Silver compounds	988	289	0	170,000	0	3,500,780	3,672,057	0	3,672,057
	Subtotal (top 15 chemicals)	**597,478**	**474,045**	**0**	**37,602,050**	**0**	**3,295,815,044**	**3,334,488,617**	**619,753**	**3,335,108,370**
	Total (all chemicals)	**3,142,461**	**492,008**	**0**	**37,614,017**	**0**	**3,315,896,409**	**3,357,144,895**	**621,752**	**3,357,766,648**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

Figure 4-2: Distribution of TRI On-site and Off-site Releases, New Industries, by Industry, 2000



Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

Table 4-4: Top 15 Chemicals with Largest On-site and Off-site Releases, 2000: Coal Mining

CAS Number	Chemical	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection: Class I Wells Pounds	Underground Injection: Class II-V Wells Pounds	On-site Land Releases: RCRA Subtitle C Landfills Pounds	On-site Land Releases: Other On-site Land Releases Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
--	Barium compounds	430	328	0	99,400	0	5,016,555	5,116,713	0	5,116,713
--	Manganese compounds	232	16,388	0	76,100	0	2,315,862	2,408,582	0	2,408,582
7440-39-3	Barium	0	0	0	0	0	2,284,327	2,284,327	0	2,284,327
7664-41-7	Ammonia	1,112,766	723,229	14,399	0	0	163,869	2,014,263	0	2,014,263
--	Zinc compounds	51	60	0	21,800	0	1,164,266	1,186,177	0	1,186,177
--	Vanadium compounds	36	0	0	0	0	513,828	513,864	0	513,864
--	Lead compounds	9	28	0	0	0	345,022	345,059	0	345,059
--	Copper compounds	16	18	0	0	0	336,206	336,240	0	336,240
--	Nickel compounds	28	34	0	0	0	284,012	284,074	0	284,074
--	Chromium compounds	42	67	0	11,000	0	256,575	267,684	0	267,684
7439-96-5	Manganese	0	2	0	0	0	246,056	246,058	0	246,058
--	Arsenic compounds	5	769	0	0	0	190,253	191,027	0	191,027
7440-66-6	Zinc (fume or dust)	0	0	0	0	0	150,775	150,775	0	150,775
7440-62-2	Vanadium (except when contained in an alloy)	0	0	0	0	0	119,778	119,778	0	119,778
7440-50-8	Copper	0	0	0	0	0	78,265	78,265	0	78,265
	Subtotal (top 15 chemicals)	**1,113,615**	**740,923**	**14,399**	**208,300**	**0**	**13,465,649**	**15,542,886**	**0**	**15,542,886**
	Total (all chemicals)	**1,183,965**	**741,153**	**14,399**	**208,453**	0	**13,820,012**	**15,967,981**	**20**	**15,968,001**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

Hydrochloric acid constituted 51.2 percent (592.0 million pounds) of the 1.16 billion pounds released on- and off-site by the electric utility industry. Barium compounds accounted for the second largest releases, with 200.1 million pounds or 17.3 percent of the total. Sulfuric acid was the third-most common chemical, constituting 10.3 percent (119.4 million pounds) of the total. No other chemical or chemical compound had more than 60 million pounds or constituted more than 10 percent of the total releases for the electric utilities industry.

Table 4-6 lists the 15 TRI chemicals with the largest total releases in 2000 reported by the chemical wholesale distributors industry. On- and off-site releases of the top 15 TRI chemicals totaled 1.4 million pounds, 88.0 percent of the total 1.6 million pounds of all chemicals released on- and off-site by the chemical wholesale distributors industry.

The chemical wholesale distributors industry reported 1.3 million pounds of total on-site releases of the top 15 chemicals, accounting for 90.9 percent of the 1.4 million pounds of total on- and off-site

Table 4-5: Top 15 Chemicals with Largest On-site and Off-site Releases, 2000: Electric Utilities

CAS Number	Chemical	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection: Class I Wells Pounds	Underground Injection: Class II-V Wells Pounds	On-site Land Releases: RCRA Subtitle C Landfills Pounds	On-site Land Releases: Other On-site Land Releases Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
7647-01-0	Hydrochloric acid	591,911,984	47	0	0	0	5	591,912,036	98,911	592,010,947
--	Barium compounds	1,993,304	924,592	0	0	640,025	156,562,502	160,120,423	39,957,237	200,077,660
7664-93-9	Sulfuric acid	119,385,401	6	0	0	0	0	119,385,407	50,000	119,435,407
7664-39-3	Hydrogen fluoride	57,432,540	4,201	0	0	0	51,743	57,488,484	11,500	57,499,984
--	Manganese compounds	466,879	520,982	0	0	115,152	32,070,645	33,173,658	7,349,413	40,523,071
--	Vanadium compounds	2,051,249	284,876	0	0	14,000	22,347,763	24,697,888	4,994,634	29,692,522
--	Zinc compounds	1,201,782	347,026	0	0	78,489	19,729,887	21,357,184	4,368,372	25,725,556
--	Copper compounds	313,037	337,524	0	0	406,807	12,974,209	14,031,577	3,169,685	17,201,262
--	Nickel compounds	666,712	147,193	0	0	27,885	10,219,437	11,061,227	3,026,484	14,087,711
--	Chromium compounds	309,562	110,007	0	0	60,657	10,301,647	10,781,873	2,280,073	13,061,946
--	Lead compounds	144,309	34,853	0	0	0	5,996,732	6,175,894	788,570	6,964,464
--	Arsenic compounds	142,227	156,642	0	0	29,913	5,353,335	5,682,117	1,111,875	6,793,992
7664-41-7	Ammonia	5,416,254	53,484	0	0	0	59,546	5,529,284	329,267	5,858,551
7440-39-3	Barium	291,282	5,266	0	0	0	3,961,847	4,258,395	1,459,182	5,717,577
--	Cobalt compounds	44,570	26,759	0	0	0	3,446,654	3,517,983	370,660	3,888,643
	Subtotal (top 15 chemicals)	**781,771,092**	**2,953,458**	**0**	**0**	**1,372,928**	**283,075,952**	**1,069,173,430**	**69,365,863**	**1,138,539,293**
	Total (all chemicals)	**787,819,955**	**4,206,628**	**0**	**0**	**1,373,383**	**287,498,849**	**1,080,898,816**	**74,334,647**	**1,155,233,463**

Note. On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

Table 4-6: Top 15 Chemicals with Largest On-site and Off-site Releases, 2000: Chemical Wholesale Distributors

CAS Number	Chemical	Total Air Emissions	Surface Water Discharges	Underground Injection: Class I Wells	Underground Injection: Class II-V Wells	On-site Land Releases: RCRA Subtitle C Landfills	On-site Land Releases: Other On-site Land Releases	Total On-site Releases	Off-site Releases: Transfers Off-site to Disposal	Total On- and Off-site Releases
		Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
67-56-1	Methanol	277,182	0	0	0	0	2,739	279,921	17,560	297,481
108-88-3	Toluene	136,877	6	0	0	0	6,649	143,532	28,783	172,315
78-93-3	Methyl ethyl ketone	146,409	15	0	0	0	8,297	154,721	11,262	165,983
107-21-1	Ethylene glycol	113,415	2	0	0	0	820	114,237	17,978	132,215
75-09-2	Dichloromethane	104,179	0	0	0	0	3 600	107,779	9,963	117,742
7664-41-7	Ammonia	104,954	1,952	0	0	0	25	106,931	1,011	107,942
75-45-6	Chlorodifluoromethane (HCFC-22)	102,050	0	0	0	0	0	102,050	0	102,050
110-54-3	n-Hexane	79,265	22	0	0	0	5 514	84,801	4,205	89,006
1330-20-7	Xylene (mixed isomers)	66,648	37	0	0	0	3 410	70,095	6,288	76,383
--	Glycol ethers	34,168	4	0	0	0	6 561	40,733	23,541	64,274
108-10-1	Methyl isobutyl ketone	15,977	2	0	0	0	0	15,979	4,318	20,297
79-01-6	Trichloroethylene	13,054	0	0	0	0	2 084	15,138	4,752	19,890
115-07-1	Propylene	19,801	0	0	0	0	0	19,801	0	19,801
108-05-4	Vinyl acetate	18,560	0	0	0	0	0	18,560	31	18,591
74-85-1	Ethylene	15,256	0	0	0	0	0	15,256	0	15,256
	Subtotal (top 15 chemicals)	**1,247,795**	**2,040**	**0**	**0**	**0**	**39,699**	**1,289,534**	**129,692**	**1,419,226**
	Total (all chemicals)	**1,361,672**	**4,753**	**0**	**0**	**0**	**63,151**	**1,429,576**	**183,893**	**1,613,469**

Note. On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

releases of these top 15 chemicals. Transfers off-site to disposal constituted 9.1 percent (almost 130,000 pounds) of the total on- and off-site releases of the top 15 chemicals. Of the 1.3 million pounds of total on-site releases, 1.2 million pounds (87.9 percent) were air emissions. Chemical wholesale distributors also reported on-site land releases of 39,700 pounds and surface water discharges of 2,000 pounds for these top 15 chemicals.

Methanol constituted nearly 18.4 percent (297,500 pounds) of the 1.6 million pounds released on- and off-site by the chemical wholesale distributors industry. Toluene was the second most common chemical, constituting 10.7 percent (172,300 pounds) of the total. Methyl ethyl ketone was the third most common chemical, constituting 10.3 percent (166,000 pounds) of the total. No other chemical or chemical compound constituted more than 10 percent of the subtotal.

Table 4-7 lists the 15 TRI chemicals with the largest total releases in 2000 reported by the petroleum terminals/bulk storage industry. On- and off-site releases of the top 15 TRI chemicals totaled 3.8 million pounds, 97.0 percent of the total 3.9 million pounds of all chemicals released on- and off-site by the petroleum terminals/bulk storage industry.

The petroleum terminals/bulk storage industry reported 3.3 million pounds of total on-site releases of the top 15 chemicals. On-site releases comprised 88.0 percent of the total on- and off-site releases of these top 15 chemicals. Transfers off-site to disposal constituted nearly 12.0 percent of the total on- and off-site releases of the top 15 chemicals. Of the 3.3 million pounds of total on-site releases, just under 3.3 million pounds (98.3 percent) were air emissions. On-site land releases were 36,300 pounds and surface water discharges were 21,400 pounds.

Methyl tert-butyl ether constituted nearly 30.0 percent (1.2 million pounds) of the 3.9 million pounds released on- and off-site by the petroleum terminals/bulk storage industry. n-Hexane was the second-most common chemical, constituting 15.3 percent (593,100 pounds) of the total. Toluene was the third-most common chemical, constituting 13.1 percent (509,800 pounds) of the total. No other chemical or chemical compound constituted more than 10 percent of the total releases of the petroleum terminals/bulk storage industry.

Table 4-8 lists the 15 TRI chemicals with the largest total releases in 2000 reported by the hazardous

Table 4-7: Top 15 Chemicals with Largest On-site and Off-site Releases, 2000: Petroleum Terminals/Bulk Storage

CAS Number	Chemical	Total Air Emissions	Surface Water Discharges	Underground Injection: Class I Wells	Underground Injection: Class II-V Wells	On-site Land Releases: RCRA Subtitle C Landfills	On-site Land Releases: Other On-site Land Releases	Total On-site Releases	Off-site Releases: Transfers Off-site to Disposal	Total On- and Off-site Releases
		Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
1634-04-4	Methyl tert-butyl ether	1,123,218	5,581	0	0	0	2,245	1,131,044	29,964	1,161,008
110-54-3	n-Hexane	541,910	4,391	0	0	78	1,942	548,321	44,741	593,062
108-88-3	Toluene	474,798	2,294	0	0	74	8,145	485,311	24,472	509,783
1330-20-7	Xylene (mixed isomers)	282,453	3,025	0	0	0	8,758	294,236	35,786	330,022
71-43-2	Benzene	296,436	3,297	0	0	0	2,326	302,059	14,066	316,125
95-63-6	1,2,4-Trimethylbenzene	146,883	964	0	0	78	3,408	151,333	42,299	193,632
--	Polycyclic aromatic compounds	10,862	747	0	0	81	3	11,693	135,105	146,799
91-20-3	Naphthalene	78,447	281	0	0	89	505	79,322	27,997	107,319
100-41-4	Ethylbenzene	91,678	562	0	0	0	2,081	94,321	10,133	104,454
110-82-7	Cyclohexane	91,729	25	0	0	0	511	92,265	5,894	98,159
107-21-1	Ethylene glycol	1,026	5	0	0	0	500	1,531	73,100	74,631
106-42-3	p-Xylene	40,584	5	0	0	0	0	40,589	0	40,589
67-56-1	Methanol	37,433	0	0	0	0	0	37,433	5	37,438
75-65-0	tert-Butyl alcohol	24,630	266	0	0	0	0	24,896	7,201	32,097
7664-41-7	Ammonia	15,086	0	0	0	0	5,456	20,542	0	20,542
	Subtotal (top 15 chemicals)	**3,257,173**	**21,443**	**0**	**0**	**400**	**35,880**	**3,314,896**	**450,763**	**3,765,660**
	Total (all chemicals)	**3,362,183**	**21,909**	**0**	**0**	**486**	**36,648**	**3,421,226**	**460,550**	**3,881,776**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

waste/solvent recovery industries. On- and off-site releases of the top 15 TRI chemicals totaled 229.6 million pounds, 79.4 percent of the total 289.1 million pounds of all chemicals released on- and off-site by the hazardous waste/solvent recovery industries.

The hazardous waste/solvent recovery industries reported 200.8 million pounds of total on-site releases of these top 15 chemicals. On-site releases comprised 87.5 percent of the total on- and off-site releases of the top 15 chemicals. Transfers off-site to disposal constituted 12.5 percent of the total on- and off-site releases of the top 15 chemicals. Of the 200.8 million pounds of total on-site releases, 167.5 million pounds (83.4 percent) were to RCRA Subtitle C landfills. Class I Wells were the second most common reported source, constituting 20.8

Table 4-8: Top 15 Chemicals with Largest On-site and Off-site Releases, 2000: Hazardous Waste/Solvent Recovery

CAS Number	Chemical	Total Air Emissions	Surface Water Discharges	Underground Injection: Class I Wells	Underground Injection: Class II-V Wells	On-site Land Releases: RCRA Subtitle C Landfills	On-site Land Releases: Other On-site Land Releases	Total On-site Releases	Off-site Releases: Transfers Off-site to Disposal	Total On- and Off-site Releases
		Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
1344-28-1	Aluminum oxide (fibrous forms)	281	0	8,449	0	41,877,559	488,780	42,375,069	303,408	42,678,477
--	Zinc compounds	6,703	695	311,363	0	22,699,885	214,429	23,233,075	7,218,899	30,451,974
1332-21-4	Asbestos (friable)	284	0	0	0	11,314,434	9,251,616	20,566,334	0	20,566,334
--	Copper compounds	6,939	397	190,005	0	15,537,092	200,983	15,935,416	2,505,652	18,441,068
7440-66-6	Zinc (fume or dust)	3,595	0	0	0	17,363,956	12,873	17,380,424	2,534	17,382,958
--	Barium compounds	6,979	280	0	0	12,614,169	49,684	12,671,112	3,968,981	16,640,093
--	Lead compounds	8,901	775	250	0	10,137,452	377,958	10,525,336	3,349,246	13,874,582
--	Nitrate compounds	262	14,838	10,100,993	0	177,838	1,238,602	11,532,533	947,555	12,480,088
--	Nickel compounds	6,791	1,710	550,250	0	7,817,391	78,613	8,454,755	3,324,460	11,779,215
7439-92-1	Lead	599	6	57,273	0	9,684,423	67,835	9,810,136	1,591,045	11,401,181
--	Chromium compounds	2,756	830	2,000,250	0	3,809,998	174,808	5,988,642	3,382,808	9,371,450
7697-37-2	Nitric acid	2,108	0	7,613,956	0	49,846	87,310	7,753,220	116,871	7,870,091
7429-90-5	Aluminum (fume or dust)	35	0	0	0	5,878,343	123,765	6,002,143	1,517	6,003,660
7439-96-5	Manganese	913	0	0	0	5,208,900	10,601	5,220,414	133,765	5,354,179
--	Arsenic compounds	612	5	750	0	3,377,878	23	3,379,268	1,890,394	5,269,662
	Subtotal (top 15 chemicals)	***47,758***	***19,536***	***20,833,539***	**0**	***167,549,164***	***12,377,880***	***200,827,877***	***28,737,135***	***229,565,012***
	Total (all chemicals)	**948,196**	**45,763**	**33,903,476**	**0**	**194,611,003**	**12,922,792**	**242,431,230**	**46,635,855**	**289,067,085**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

Table 4-9: TRI Total Releases by State, New Industries, by Industry, 2000

State	Total On- and Off-site Releases						
	Metal Mining	Coal Mining	Electric Utilities	Chemical Wholesale Distributors	Petroleum Terminals/Bulk Storage	Hazardous Waste/Solvent Recovery	Total New Industries
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
Alabama	0	154,993	51,818,302	32,919	49,825	21,263,754	73,319,793
Alaska	533,167,944	0	211,400	351	133,136	0	533,512,831
American Samoa	0	0	0	0	0	0	0
Arizona	695,271,494	0	8,855,576	17,624	53,521	1,495,403	705,693,618
Arkansas	0	0	3,505,530	648	9,286	548,979	4,064,443
California	2,634,984	0	561,950	90,808	421,990	32,244,958	35,954,691
Colorado	11,708,422	2,652,207	9,688,202	6,402	44,086	1,196	24,100,516
Connecticut	0	0	1,590,517	9,308	116,805	680,353	2,396,983
Delaware	1,594	0	5,356,467	0	2,392	0	5,360,453
District of Columbia	0	0	53,008	0	0	0	53,008
Florida	0	0	69,205,438	78,244	136,358	2,478	69,422,519
Georgia	0	0	60,424,451	31,081	44,128	6,955	60,506,615
Guam	0	0	204,400	0	19,883	0	224,283
Hawaii	0	0	713,115	5	59,688	0	772,808
Idaho	35,971,429	0	0	0	18,530	15,377,110	51,367,069
Illinois	619,859	3,503,117	30,916,452	80,774	107,697	21,521,110	56,749,009
Indiana	0	857,431	63,737,238	56,404	89,201	6,042,720	70,782,994
Iowa	0	0	9,721,427	114,596	4,694	33	9,840,750
Kansas	0	0	9,403,523	10,877	36,324	207,586	9,658,310
Kentucky	0	4,628	60,075,224	31,509	40,134	625,885	60,777,380
Louisiana	5,148	0	5,929,963	39,222	29,358	13,364,985	19,368,675
Maine	0	0	178,565	6	47,235	0	225,806
Maryland	0	119,048	29,278,070	916	73,665	26	29,471,725
Massachusetts	0	0	6,763,546	82,459	323,173	165,113	7,334,291
Michigan	0	0	50,555,000	28,955	45,954	29,609,970	80,239,879
Minnesota	0	0	12,321,958	13,767	1,340	1,133,426	13,470,491
Mississippi	0	0	16,573,161	3,575	104,452	11	16,681,199
Missouri	46,960,403	0	25,451,217	78,195	49,030	855	72,539,700
Montana	58,585,032	8,122	11,680,643	3,839	7,011	0	70,284,647
Nebraska	0	0	8,598,475	0	0	318,002	8,916,477
Nevada	1,000,588,229	0	2,509,254	255	2,339	768,383	1,003,868,460
New Hampshire	0	0	3,276,839	605	28,408	0	3,305,851
New Jersey	0	0	9,377,566	142,523	295,800	750,714	10,566,603
New Mexico	113,937,471	5,082,219	7,745,494	7,932	5,539	4,686	126,783,342
New York	24,636	0	24,041,441	15,416	238,128	5,828,026	30,147,647
North Carolina	0	0	94,951,361	103,963	76,141	309,128	95,440,592
North Dakota	0	140,144	21,829,198	2,114	0	0	21,971,456
Northern Marianas	0	0	0	0	7,990	0	7,990
Ohio	0	4,733	104,014,521	89,390	86,541	42,027,539	146,222,725
Oklahoma	0	0	4,182,892	16,259	37,151	5,087,642	9,323,944
Oregon	0	0	279,904	16,457	29,672	54,843,198	55,169,231
Pennsylvania	0	244,611	80,630,197	57,582	205,244	5,539,717	86,677,351
Puerto Rico	0	0	12,110,534	11,400	24,874	66,750	12,213,558
Rhode Island	0	0	27,448	500	48,370	500	76,818
South Carolina	0	0	20,280,547	20,709	6,314	14,596	20,322,166
South Dakota	3,660,849	0	1,967,139	0	0	0	5,627,988
Tennessee	21,190,397	0	42,598,170	43,825	30,894	52,013	63,915,298
Texas	41,621	0	36,584,463	215,148	490,415	19,527,731	56,859,377
Utah	833,058,670	1	7,890,368	7,335	6,388	8,919,897	849,882,659
Vermont	0	0	0	0	0	0	0
Virgin Islands	0	0	29,175	0	1,999	0	31,174
Virginia	0	9,600	24,080,132	28,338	99,812	184,335	24,402,217
Washington	338,466	0	4,752,744	3,135	51,307	515,633	5,661,284
West Virginia	0	3,187,148	76,983,296	1,034	12,186	18	80,183,682
Wisconsin	0	0	11,708,271	17,065	20,390	15,669	11,761,396
Wyoming	0	0	10,009,691	0	6,980	0	10,016,671
Total	**3,357,766,648**	**15,968,001**	**1,155,233,463**	**1,613,469**	**3,881,776**	**289,067,085**	**4,823,375,448**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

million pounds, or 10.4 percent of the total on-site releases.

Aluminum oxide (fibrous forms) constituted 14.8 percent (42.7 million pounds) of the 289.1 million pounds of chemicals released on- and off-site by the hazardous waste/solvent recovery industries. Zinc compounds had the second largest total releases, with 30.5 million pounds or 10.5 percent of the total. Asbestos (friable), copper compounds, zinc (fume or dust), and barium compounds had between 16 and 21 million pounds of releases, but none constituted more than 10 percent of the total releases of the hazardous waste/solvent recovery industries.

Total Releases by State, 2000

As Table 4-9 demonstrates, the geographic distribution of TRI chemical releases for the new industries is heavily concentrated in a few states. Four states—Nevada, Utah, Arizona, and Alaska—had total on- and off-site releases of over 500.0 million pounds. Nevada ranked first with 1.0 billion pounds, or 20.8 percent of the total for all states. Utah ranked second with 849.9 million pounds, or 17.6 percent of the total. Arizona ranked third with 705.7 million pounds, or 14.6 percent of the total. Alaska ranked fourth with 533.5 million pounds, or 11.1 percent of the total. Together, these four states accounted for 64.1 percent of the total on- and off-site releases reported in all states. The metal mining industry accounted for 99.0 percent of these four states' total on- and off-site releases.

The electric utilities industry in Ohio reported the largest total releases for this industry, with 104.0 million pounds or 9.0 percent of total releases by the electric utilities industry. The hazardous waste/solvent recovery industries in Oregon reported the largest total releases for these industries, with 54.8 million pounds or 19.0 percent of total releases by the hazardous waste/solvent recovery industries.

Ninety percent of the total releases by the coal mining industry occurred in four states: New Mexico with 5.1 million pounds, Illinois with 3.5 million pounds, West Virginia with 3.2 million pounds and Colorado with 2.7 million pounds.

Texas was the state with the largest total releases by both the chemical wholesale distributors and the petroleum terminals/bulk storage industries. Chemical wholesale distributors in Texas reported 215,100 pounds of total releases (13.3 percent of the total for this industry) and petroleum terminals and bulk storage facilities in Texas reported 490,400 pounds of total releases (12.6 percent of the total for this industry).

Waste Management Data, 2000

Quantities of TRI Chemicals in Waste Managed, 2000

As shown in Table 4-10 and Figure 4-3, facilities in the new industries reported a total of 6.15 billion pounds of TRI chemicals in waste managed in 2000. Of the total production-related waste managed by the new industries, just under 4.60 billion pounds (74.7 percent) were reported released on- and off-site. On-site treatment was the next most common method of waste management, accounting for 1.00 billion pounds (16.3 percent) of the total. Together, these two methods represented 91.1 percent of the total production-related waste managed.

The metal mining industry reported managing 3.43 billion pounds of total production-related waste in 2000, 55.8 percent of the total for all industries combined. Nearly 91.5 percent (3.14 billion pounds) of the metal mining industry's production-related waste was released on- and off-site. On-site treatment, the metal mining industry's second-most common waste management method, accounted for 7.5 percent (258.8 million pounds) of the industry's production-related waste.

The electric utilities industry ranked second among new industries for total production-related waste managed, with 1.64 billion pounds, or 26.7 percent of the total for all new industries. On- and off-site releases accounted for 1.15 billion pounds (70.2 percent) of the electric industry's production-related waste. Electric utilities reported 481.7 million pounds (29.4 percent) of the industry's waste treated on-site, the largest total of any new industry.

Table 4-10: Quantities of TRI Chemicals in Waste Managed, New Industries, by Industry, 2000

SIC Code	Industry	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-production-related Waste Managed Pounds
10	Metal Mining	32,398,053	2,042,398	0	0	258,763,697	166,274	3,138,140,726	3,431,511,148	219,374,009
12	Coal Mining	35 718	7,774	0	0	358,555	0	15,985,805	16,387 852	2,646,699
491/493	Electric Utilities	94,645	7,231,764	25,745	13,607	481,671,522	370,726	1,150,350,804	1,639.758,814	328,780
5169	Chemical Wholesale Distributors	7,548,921	153 469	0	9,957,310	574,681	3,028,130	1,517,566	22 780 077	170,919
5171	Petroleum Terminals/Bulk Storage	27,082,736	1,729,889	34,706	123,547	7,176,661	441,525	3,976,827	40,565,892	86,622
4953/ 7389	Hazardous Waste/Solvent Recovery	128,391 137	22,011,626	6,985,191	256,029,724	254,270,231	43,726,873	289,719 497	1,001,134,279	1,498,318
	Total	**195,551,210**	**33,176,920**	**7,045,642**	**266,124,188**	**1,002,815,347**	**47,733,528**	**4,599,691,226**	**6,152,138,062**	**224,105,347**

Note Data are from Section 8 of Form R

Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

The hazardous waste/solvent recovery industries reported the third-largest total production-related waste managed among the new industries, with 1.00 billion pounds. Like the two leading industries, the hazardous waste/solvent recovery industries reported the highest volume of waste handled through on- and off-site releases—289.7 million pounds. But the hazardous waste/solvent recovery industries' ratio of on- and off-site releases was lower: 28.9 percent. The quantity released on- and off-site by the hazardous waste/solvent recovery industries was just slightly higher than its off-site energy recovery (25.6 percent, or 256.0 million pounds) and on-site treatment (25.4 percent, or 254.3 million pounds).

Of the other three industries—coal mining, chemical wholesale distributors, and petroleum terminals/bulk storage—none reported managing more than about 40 million pounds of total production-related waste. The petroleum terminals/bulk storage industry reported 40.6 million pounds, with 27.1 million pounds recycled on-site. The chemical wholesale distributors industry reported 22.8 million pounds of production-related waste managed, with 10.0 million pounds of off-site energy recovery and 7.5 million pounds of on-site recycling. The coal mining industry reported 16.4 million pounds, with 16.0 million pounds released on- and off-site.

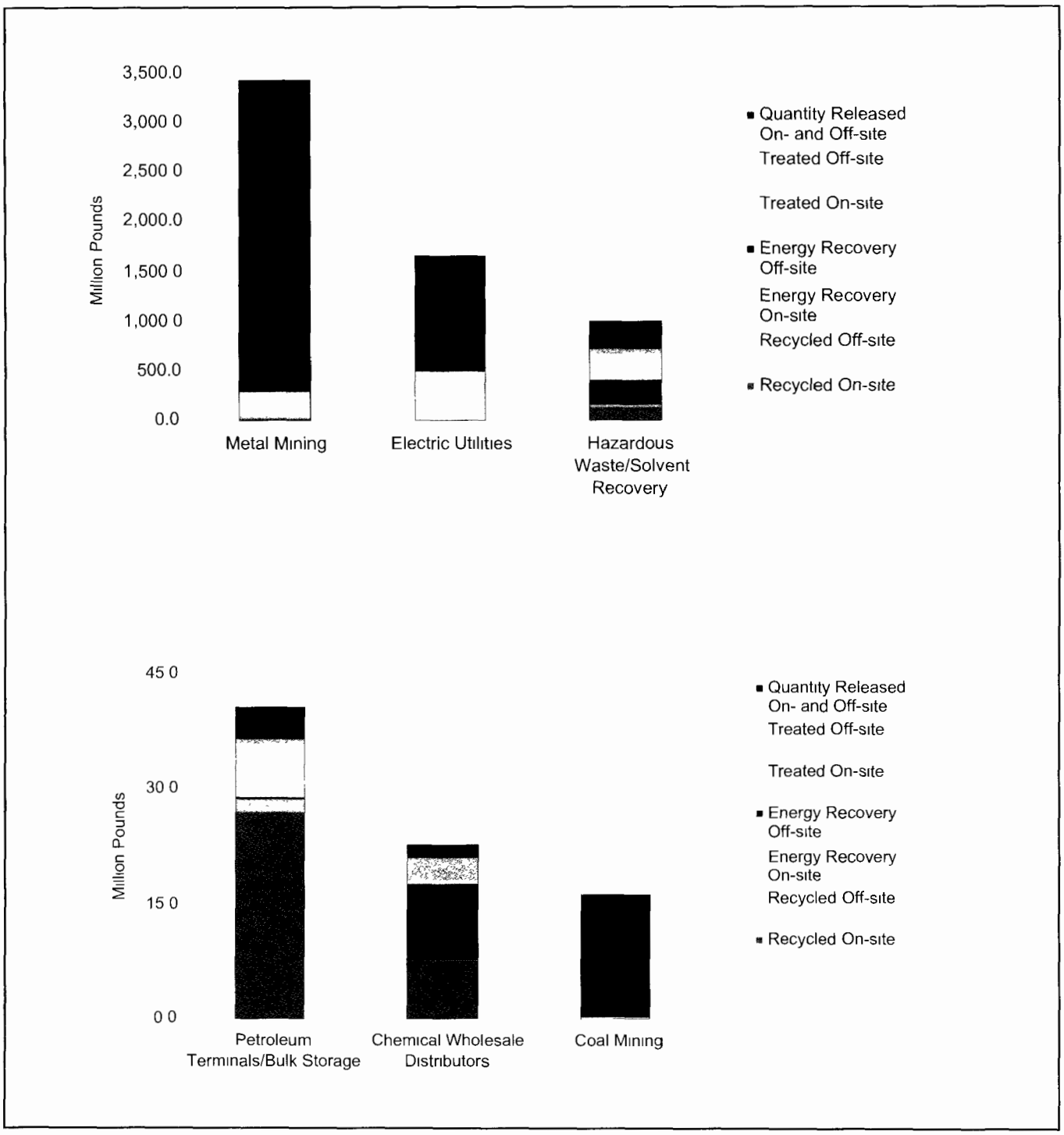
Transfers Off-site for Further Waste Management/Disposal, 2000

As shown in Table 4-11, the new industries transferred a total of 453.1 million pounds of TRI waste for further waste management and disposal in 2000. The hazardous waste/solvent recovery industries accounted for 78.3 percent (354.8 million pounds) of the combined total transfers for all new industries. Within the hazardous waste/solvent recovery industries, 69.7 percent (247.2 million pounds) of transfers for further waste management and disposal were transfers to energy recovery, while other transfers off-site to disposal accounted for 13.1 percent (46.6 million pounds) of the industries' total.

The electric utilities industry accounted for the next highest share—17.2 percent (78.0 million pounds)—of the combined total for all industries. Of the electric utilities industry's total off-site transfers, 95.4 percent (74.3 million pounds) came from other transfers off-site to disposal, and 4.6 percent (3.6 million pounds) from transfers to recycling.

The chemical wholesale distributors industry reported 13.9 million pounds, 3.1 percent of the total transfers off-site for further waste management and disposal. Of those 13.9 million pounds, 10.5 million pounds were transfers to energy recovery and 3.0 million pounds were transfers to treatment. The petroleum terminals/bulk storage industry

Figure 4-3: Distribution of Quantities of TRI Chemicals in Waste Managed, New Industries, 2000



Note: Data are from Section 8 of Form R

reported 3.7 million pounds of transfers off-site for further waste management and disposal with 2.7 million pounds as transfers to recycling. The coal mining industry reported almost 7,800 pounds, almost all of which was transfers to recycling.

Of the 453.1 million pounds of transfers off-site for further waste management and disposal by the new industries, 56.9 percent (257.9 million pounds) was managed through transfers to energy recovery, nearly 27.0 percent (122.2 million pounds) through other transfers off-site to disposal, and 8.7 percent (39.3 million pounds) through transfers to treatment. The hazardous waste/solvent recovery industries accounted for 247.2 million pounds of the total (257.9 million pounds) managed through transfers to energy recovery, and chemical wholesale distributors accounted for 10.5 million pounds. Of the 122.2 million pounds of other transfers off-site to disposal, the second most-common management category, the electric utilities industry accounted for 74.3 million pounds and hazardous waste/solvent recovery accounted for 46.6 million pounds of the total.

Projected Quantities of TRI Chemicals Managed in Waste, 2000-2002

As described in **Waste Management** in Chapter 1, on each Form R that it submits, a facility reports actual waste management quantities for the current and prior years and projected quantities for the next two years. Table 4-12 outlines the current and projected quantities of TRI chemicals in waste in the new industries. In 2000, the new industries reported 6.15 billion pounds and projected totals of nearly 5.60 billion pounds for 2001 and just over 5.60 billion pounds for 2002. Those projections represent a 9.0 percent decrease from 2000 to 2001 and an 8.8 percent decrease from 2000 to 2002.

All new industries anticipated declines for the period 2000 to 2001, for a combined projected decline of 553.3 million pounds. The largest net reductions in this period were projected to come from the metal mining industry, which estimated a decline of 400.9 million pounds, and from the hazardous waste/solvent recovery industries, which anticipated a decline of 135.9 million pounds.

Table 4-11: TRI Transfers Off-site for Further Waste Management/Disposal, New Industries, by Industry, 2000

SIC Code	Industry	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs: Metals and Metal Compounds Pounds	Transfers to POTWs: Non-metal TRI Chemicals Pounds	Other Off-site Transfers* Pounds	Other Transfers Off-site to Disposal**	Total Transfers for Further Waste Management/ Disposal Pounds
10	Metal Mining	2,192,086	0	309	4,203	25,500	0	617,549	2,839,648
12	Coal Mining	7,774	0	0	0	0	0	20	7,794
491/493	Electric Utilities	3,584,107	13,612	19,759	4,844	1,661	124	74,329,803	77,953,910
5169	Chemical Wholesale Distributors	157,674	10,480,663	2,991,926	68	41,609	1,421	183,825	13,857,186
5171	Petroleum Terminals/Bulk Storage	2,669,945	134,437	386,745	306	12,195	0	460,244	3,663,873
4953/ 7389	Hazardous Waste/Solvent Recovery	21,798,187	247,231,181	35,886,539	31,127	3,264,835	5,205	46,604,727	354,821,801
	Total	**30,409,774**	**257,859,893**	**39,285,277**	**40,549**	**3,345,800**	**6,750**	**122,196,168**	**453,144,211**

Note: Total Transfers Off-site for Further Waste Management/Disposal are from Section 6 of Form R

Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

* Other Off-site Transfers are transfers reported without a valid waste management code
** Does not include transfers to POTWs of metals and metal compounds

Table 4-12: Current Year and Projected Quantities of TRI Chemicals in Waste, New Industries, by Industry, 2000-2002

SIC Code	Industry	Total Production-related Waste Managed				
			Projected			
		Current Year 2000 Pounds	2001 Pounds	2002 Pounds	Change 2000-2001 Percent	Change 2000-2002 Percent
10	Metal Mining	3,431,511,148	3,030,602,245	3,043,839,410	-11.7	-11.3
12	Coal Mining	16,387,852	15,313,768	15,308,533	-6.6	-6.6
491/493	Electric Utilities	1,639,758,814	1,628,898,494	1,635,677,851	-0.7	-0.2
5169	Chemical Wholesale Distributors	22,780,077	18,599,295	18,544,491	-18.4	-18 6
5171	Petroleum Terminals/Bulk Storage	40,565,892	40,169,991	40,679,043	-1.0	0.3
4953/7389	Hazardous Waste/Solvent Recovery	1,001,134,279	865,214,526	854,024,229	-13.6	-14.7
	Total	**6,152,138,062**	**5,598,798,319**	**5,608,073,557**	**-9.0**	**-8.8**

Note: Data are from Section 8 (Total of 8 1 through 8 7) of Form R for 2000 Current Year is Column B, 2001 is Column C and 2002 is Column D

For 2002, all new industries projected reductions from their 2000 totals except for the petroleum terminals/bulk storage industry, which anticipated a slight increase of just over 113,200 pounds. The largest net decrease was projected to come from the metal mining industry, which anticipated managing 3.04 billion pounds of total production related waste in 2002, 11.3 percent (387.7 million pounds) less than in 2000. The next largest net reduction was projected by the hazardous waste/solvent recovery industries, which expected to handle 854.0 million pounds of waste in 2000—147.1 million pounds (14.7 percent) less than in 2000.

Source Reduction, 2000

As shown in Table 4-13 , the new industries submitted 14,731 Form Rs, 8.8 percent (1,296) of which reported source reduction activities.

The hazardous waste/solvent recovery industries had the highest ratio of forms reporting source reduction activity (14.2 percent), followed by the chemical wholesale distributors industry (12.7 percent), the electric utilities industry (8.2 percent), the petroleum terminals/bulk storage industry (5.4 percent), and the metal mining industry (3.7 percent). The coal mining industry reported no source reduction activities.

Good operating practices, reported on 956 forms, accounted for the largest number of source reduction activities reported by the new industries. This was true for each of the new industries except for metal mining, where process modifications were most often reported. Spill and leak prevention was the second most often reported source reduction activity for all new industries, with 476 forms.

Table 4-13: Number of Forms Reporting Source Reduction Activity, New Industries, by Industry, 2000

SIC Code	Industry	Total Form Rs Number	Forms Reporting Source Reduction Activity: Number	Forms Reporting Source Reduction Activity: Percent of All Form Rs Percent	Category of Source Reduction Activity: Good Operating Practices Number	Inventory Control Number	Spill and Leak Prevention Number	Raw Materials Modifications Number	Process Modifications Number	Cleaning and Degreasing Number	Surface Preparation and Finishing Number	Product Modifications Number
10	Metal Mining	655	24	3 7	4	1	4	0	14	0	0	1
12	Coal Mining	203	0	0 0	0	0	0	0	0	0	0	0
491/493	Electric Utilities	6,038	497	8 2	344	63	41	96	61	0	0	1
5169	Chemical Wholesale Distributors	1,871	237	12 7	143	36	130	11	30	24	0	2
5171	Petroleum Terminals/Bulk Storage	3,499	188	5 4	100	26	160	0	48	16	0	7
4953/ 7389	Hazardous Waste/Solvent Recovery	2,465	350	14 2	365	0	141	0	34	0	0	3
	Total	**14,731**	**1,296**	**8.8**	**956**	**126**	**476**	**107**	**187**	**40**	**0**	**14**

Note: All source reduction activities on a form are counted in the corresponding category Totals do not equal the sum of the categories because forms may report more than one source reduction activity

Process modifications followed with 187 forms, and inventory controls were reported on 126 forms.

1998-2000 TRI DATA

Comparisons of TRI data across reporting years are made on the basis of chemicals that were reportable in all years with the same reporting definitions. This ensures that apparent increases or decreases from one year to another are not the result of changes in the list of TRI chemicals. **Making Year-to-Year Comparisons of TRI Data**, in Chapter 1, explains these multiyear analyses; an understanding of these issues is essential for accurate interpretation of the multiyear data presented in this chapter.

Progress in reducing releases and quantities of TRI chemicals in wastes for the new industry sectors can be assessed from 1998 since that is the first year they were required to report to TRI. Comparisons of on-site and off-site releases are also made only for chemicals that were reportable with the same definition in the years 1998 to 2000. Such comparisons exclude the PBT chemicals and vanadium and vanadium compounds since these chemicals were either added to the TRI list in 2000 or their reporting definition or reporting threshold was changed in 2000. See Chapter 3 for an explanation of reporting threshold changes and the PBT chemicals.

On- and Off-site Releases, 1998-2000

Table 4-14 compares the number of TRI forms submitted by the new industries and the new industries' total on- and off-site releases for the years 1998-2000. The new industries submitted a total of 14,349 forms in 2000, down from 15,001 in 1998 and 14,572 in 1999—declines of 4.3 percent from 1998-2000 and 1.5 percent from 1999-2000. The metal mining industry had the largest percentage decline in this period as it submitted 761 forms in 1998, 686 in 1999, and 599 in 2000—a decline of 21.3 percent from 1998-2000. Only the coal mining industry increased the number of forms submitted, from 188 in 1998, to 202 in 1999, to 212 in 2000. In each of the three years, electric utilities submitted the largest number of forms (4,241 in 2000), followed by petroleum terminals/bulk storage (3,510 in 2000), chemical wholesale distributors (3,440 in 2000), hazardous waste/solvent recovery (2,347 in 2000), metal mining (599 in 2000), and coal mining (212 in 2000).

Table 4-14: TRI Forms and Total Releases, New Industries, by Industry, 1998-2000

		Total Forms					Total On and Off-site Releases				
SIC Code	Industry	1998 Number	1999 Number	2000 Number	Change 1999-2000 Percent	Change 1998-2000 Percent	1998 Pounds	1999 Pounds	2000 Pounds	Change 1999-2000 Percent	Change 1998-2000 Percent
10	Metal Mining	761	686	599	-12.7	-21.3	3,563,214,115	3,866,025,389	3,310,957,754	-14.4	-7.1
12	Coal Mining	188	202	212	5 0	12 8	13,392,904	10,737,088	15,327,860	42 8	14 4
491/493	Electric Utilities	4,304	4,186	4,241	1.3	-1 5	1,130,899,996	1,160,317,399	1,123,370,213	-3 2	-0 7
5169	Chemical Wholesale Distributors	3,623	3,526	3,440	-2 4	-5 1	1,551,730	2,002,363	1,613,469	-19 4	4 0
5171	Petroleum Terminals/Bulk Storage	3,769	3,568	3,510	-1.6	-6 9	4,525,712	4,345,041	3,728,840	-14 2	-17 6
4953/ 7389	Hazardous Waste/Solvent Recovery	2,356	2,404	2,347	-2 4	-0 4	280,263,611	279,801,143	285,854,490	2 2	2 0
	Total	**15,001**	**14,572**	**14,349**	**-1.5**	**-4.3**	**4,993,848,068**	**5,323,228,423**	**4,740,852,625**	**-10.9**	**-5.1**

Note: Does not include PBT chemicals, vanadium and vanadium compounds **On-site Releases** are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

Facilities/forms are included in the original industry category if they did not report a new industry SIC code Facilities/forms are included in the new industry category if the facility/form has a new industry SIC code and no SIC code in 20-39 If the facility reported in any year prior to 1998 and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the original industry category If the facility reported for the first time in 1998 or later and the facility/form has a combination of original and new industry SIC codes, then the facility/form is included in the new industry category

Meanwhile, total on- and off-site releases have moved up and down in the period 1998-2000. In 1998, the new industries reported just under 5.00 billion pounds of total on- and off-site releases. Releases rose to 5.32 billion pounds in 1999 before falling back down to 4.74 billion pounds in 2000—a net decline of 5.1 percent from 1998-2000.

The largest absolute reduction came from the metal mining industry, which reported a decrease in total on- and off-site releases of 7.1 percent, from 3.56 billion pounds in 1998 to 3.31 billion pounds in 2000, a net decline of 252.3 million pounds. The change from 1999 to 2000 for the metal mining industry was a reduction of 14.4 percent from 3.87 million pounds to 3.31 million pounds.

The next largest absolute reduction came from the electric utilities industry, which cut total on- and off-site releases by 0.7 percent, from 1.13 billion pounds in 1998 to 1.12 billion pounds in 2000, a net decline of 7.5 million pounds. The reduction from 1999 to 2000 for the electric utilities industry was 3.2 percent, from 1.16 million pounds to 1.12 million pounds.

The petroleum terminals/bulk storage industry reported the largest percentage reduction, of 17.6 percent from 4.5 million pounds in 1998 to 3.7 million pounds in 2000.

The other three new industries reported increases over the period 1998-2000. Coal mining reported the largest percentage increase, of 14.4 percent from 13.4 million pounds to 15.3 million pounds. Although coal mines did report an overall decrease from 1998 to 1999, the increase from 1999 to 2000 was 42.8 percent. Chemical wholesale distributors reported an increase of 4.0 percent from 1998 to 2000, from 1.55 million pounds to 1.61 million pounds. This industry did report a net reduction of 19.4 percent from 1999 to 2000. The hazardous waste/solvent recovery industries reported an overall increase of 2.0 percent from 1998 to 2000, from 280.3 million pounds to 285.9 million pounds, after a reduction from 1998 to 1999.

Waste Management Data, 1998-2000

As shown in Table 4-15, total production-related waste managed by the new industries fell from 6.56 billion pounds in 1998 to 6.05 billion pounds in 2000, a 7.8 percent decrease. Overall, the industries reported reducing total production-related waste by 513.5 million pounds from 1998 to 2000. The metal mining industry reported the largest absolute decline—448.0 million pounds from 1998 to 2000, an 11.7 percent reduction. The hazardous waste/solvent recovery industries reported the next largest decline—80.4 million pounds from 1998 to 2000, a 7.6 percent decline. The third-largest decline came in the chemical wholesale distributors industry,

Table 4-15: Total Production-related Waste Managed, New Industries, by Industry, 1998-2000

SIC Code	Industry	Total Production-related Waste Managed						
		1998	1999	2000	Change 1999-2000		Change 1998-2000	
		Pounds	Pounds	Pounds	Pounds	Percent	Pounds	Percent
10	Metal Mining	3,835,861,814	3,651,497,908	3,387,839,621	-263,658,287	-7.2	-448,022,193	-11.7
12	Coal Mining	13,891,064	11,123,938	15,748,237	4,624,299	41 6	1,857,173	13 4
491/493	Electric Utilities	1,532,979,280	1,566,344,845	1,599,427,067	33,082,222	2.1	66,447,787	4.3
5169	Chemical Wholesale Distributors	55,686,659	41,731,876	22,780,075	-18,951,801	-45 4	-32,906,584	-59.1
5171	Petroleum Terminals/Bulk Storage	60,882,666	49,557,284	40,401,448	-9,155,836	-18.5	-20,481,218	-33.6
4953/ 7389	Hazardous Waste/Solvent Recovery	1,063,282,574	996,293,889	982,890,749	-13,403,140	-1 3	-80,391,825	-7 6
	Total	**6,562,584,057**	**6,316,549,740**	**6,049,087,197**	**-267,462,543**	**-4.2**	**-513,496,860**	**-7.8**

Note. Does not include PBT chemicals, vanadium and vanadium compounds Data are from Section 8 (total of 8 1 through 8 7) of Form R of year indicated

which reported a 59.1 percent decline (32.9 million pounds). Petroleum bulk terminals reported a 20.5 million pound reduction from 1998 to 2000.

The electric utilities industry and the coal mining industry both reported increases in total production-related waste managed from 1998 to 2000—increases of 66.4 million pounds (4.3 percent) and 1.9 million pounds (13.4 percent), respectively. The increases in these industries were recorded both from 1998 to 1999 and from 1999 to 2000.

The trajectory of decreases and increases have held steady year-to-year in each industry as every new industry but coal mining and electric utilities reduced the amount of total production-related waste they managed. From 1999 to 2000, the new industries decreased production-related waste by 267.5 million pounds, or 4.2 percent. The largest absolute decline came from the metal mining industry, which trimmed production-related waste by 263.7 million pounds or 7.2 percent. The chemical wholesale distributors industry had the next largest absolute decline—just under 19.0 million pounds, or 45.4 percent. The hazardous waste/solvent recovery industries reported the third-largest decline—13.4 million pounds, or 1.3 percent.

The electric utilities industry reported an increase in total production-related waste of 33.1 million pounds from 1999 to 2000, a 2.1 percent increase. The coal mining industry reported an increase of 4.6 million pounds, a 41.6 percent increase, from 1999 to 2000.

Chapter 5

Toxics Release Inventory Data for Original Reporting Industries

Chapter 5

Toxics Release Inventory Data for Original Reporting Industries

This chapter provides an overview of 2000 TRI data by industry sector for the 20 industries that have been required to report to TRI since the program began in 1987. Analyses of TRI reporting by the industries added in 1998 appear in Chapter 4.

The chapter summarizes release and other waste management data by industry for 2000 and for 1995 to 2000. Change in on- and off-site releases is measured since 1988, and waste management data are reviewed for 1991 to 2000. The discussion in **Making Year-to-Year Comparisons of TRI Data** in Chapter 1 is important for accurate interpretation of these data because of the significant changes in TRI over time.

Box 5-1 lists the original TRI industries by Standard Industrial Classification (SIC) code. Tables in this chapter also present data submitted on TRI chemical forms that report more than one SIC code in the manufacturing sector. Box 5-2 explains EPA's method for analyzing this "multiple-codes" group, as well as the "no-codes" group.

Box 5-1: Standard Industrial Classification (SIC) Codes for the Original TRI Industries

20	Food and kindred products Manufacture or processing of foods and beverages for human consumption, and related products, such as manufactured ice, chewing gum, vegetable and animal fats and oils, and prepared feeds for animals and fowls.
21	Tobacco products Manufacture of cigarettes, cigars, smoking and chewing tobacco, snuff, and reconstituted tobacco. Stemming and redrying of tobacco. Manufacture of non-tobacco cigarettes.
22	Textile mill products Preparation of fiber and subsequent manufacture of yarn, thread, braids, twine, and cordage. Manufacture of broadwoven fabrics, narrow woven fabrics, knit fabrics, and carpets and rugs from yarn. Dyeing and finishing of fiber, yarn, fabrics, and knit apparel. Coating, waterproofing, or otherwise treating fabrics. Integrated manufacture of knit apparel and other finished articles from yarn. Manufacture of felt goods, lace goods, nonwoven fabrics, and miscellaneous textiles.
23	Apparel and other finished products made from fabrics and similar materials Production of clothing. Fabrication of products by cutting and sewing purchased woven or knit textile fabrics and related materials, such as leather, rubberized fabrics, plastics, and furs. Manufacture of clothing by cutting and joining (e.g., by adhesives) material such as paper and nonwoven textiles.
24	Lumber and wood products, except furniture Cutting timber and pulpwood. Also, merchant sawmills, lath mills, shingle mills, cooperage stock mills, planing mills, and plywood mills and veneer mills engaged in producing lumber and wood basic materials. Manufacture of finished articles made entirely or mainly of wood or related materials.
25	Furniture and fixtures Manufacture of household, office, public building, and restaurant furniture, and office and store fixtures.

Box 5-1: Standard Industrial Classification (SIC) Codes for the Original TRI Industries (continued)

26 Paper and allied products
Manufacture of pulps from wood and other cellulose fibers and from rags. Manufacture of paper and paperboard. Manufacture of paper and paperboard into converted products, such as paper coated off the paper machine, paper bags, paper boxes, and envelopes. Manufacture of bags from plastic film and sheet.

27 Printing, publishing, and allied industries
Printing by one or more common processes, such as letterpress, lithography (including offset), gravure, or screen. Bookbinding, platemaking, and other services performed for the printing trade. Publishing newspapers, books, and periodicals (whether or not the establishment also prints them).

28 Chemicals and allied products
Production of basic chemicals. Manufacture of products by predominantly chemical processes. There are three general classes of products: 1) basic chemicals, such as acids, alkalis, salts, and organic chemicals; 2) chemical products to be used in further manufacture, such as synthetic fibers, plastics materials, dry colors, and pigments; and 3) finished chemical products to be used for ultimate consumption, such as drugs, cosmetics, and soaps, or to be used as materials or supplies in other industries, such as paints, fertilizers, and explosives.

29 Petroleum refining and related industries
Production of gasoline, kerosene, distillate fuel oils, residual fuel oils, and lubricants, through fractionation or straight distillation of crude oil, redistillation of unfinished petroleum derivatives, cracking, or other processes. (Establishments also produce aliphatic and aromatic chemicals as byproducts.)

30 Rubber and miscellaneous plastics products
Manufacture of products, not elsewhere classified, from plastics resins and from natural, synthetic, or reclaimed rubber, gutta percha, balata, or gutta siak. Includes manufacture of tires.

31 Leather and leather products
Tanning, currying, and finishing hides and skins. Converting leather. Manufacture of finished leather and artificial leather products and some similar products made of other materials.

32 Stone, clay, glass, and concrete products
Manufacture of flat glass and other glass products, cement, structural clay products, pottery, concrete and gypsum products, cut stone, abrasive and asbestos products, and other products from materials taken principally from the earth in the form of stone, clay, and sand. (May include mining and quarrying activities operated by manufacturing establishments in this group.)

33 Primary metal industries
Smelting and refining ferrous and nonferrous metals from ore, pig, or scrap. Rolling, drawing, and alloying metals. Manufacture of castings and other basic metal products. Manufacture of nails, spikes, and insulated wire and cable. Includes production of coke.

34 Fabricated metal products, except machinery and transportation equipment
Fabrication of ferrous and nonferrous metal products, such as metal cans, tinware, handtools, cutlery, general hardware, non-electric heating apparatus, fabricated structural metal products, metal forgings, metal stampings, ordnance (except vehicles and guided missiles), and a variety of metal and wire products, not elsewhere classified.

Box 5-1: Standard Industrial Classification (SIC) Codes for the Original TRI Industries (continued)

35 Industrial and commercial machinery and computer equipment
Manufacture of industrial and commercial machinery and equipment and computers. Manufacture of engines and turbines; farm and garden machinery; construction, mining, and oil field machinery; elevators and conveying equipment; hoists, cranes, monorails, and industrial trucks and tractors; metalworking machinery; special industry machinery; general industrial machinery; computer and peripheral equipment and office machinery; and refrigeration and service industry machinery.

36 Electronic and other electrical equipment and components, except computer equipment
Manufacture of machinery, apparatus, and supplies for the generation, storage, transmission, transformation, and utilization of electrical energy. Manufacture of electricity distribution equipment, electrical industrial apparatus, household appliances, electrical lighting and wiring equipment, radio and television receiving equipment, communications equipment, electronic components and accessories, and other electrical equipment and supplies.

37 Transportation equipment
Manufacture of equipment for transportation of passengers and cargo by land, air, and water. Includes motor vehicles, aircraft, guided missiles and space vehicles, ships, boats, railroad equipment, and miscellaneous transportation equipment, such as motorcycles, bicycles, and snowmobiles.

38 Measuring, analyzing, and controlling instruments, photographic, medical, and optical goods; watches and clocks
Manufacture of instruments (including professional and scientific) for measuring, testing, analyzing, and controlling, and their associated sensors and accessories; optical instruments and lenses; surveying and drafting instruments; hydrological, hydrographic, meteorological, and geophysical equipment; search, detection, navigation, and guidance systems and equipment; surgical, medical, and dental instruments, equipment, and supplies; ophthalmic goods; photographic equipment and supplies; and watches and clocks.

39 Miscellaneous manufacturing industries
Manufacture of products not classified in any other major manufacturing group. Includes jewelry, silverware, and plated ware; musical instruments; dolls, toys, games, and sporting and athletic goods; pens, pencils, and artists' materials; buttons, costume novelties, and miscellaneous notions; brooms and brushes; caskets; and other miscellaneous products.

Source: Executive Office of the President, Office of Management and Budget, *Standard Industrial Classification Manual,* 1987.

Box 5-2: Multiple SIC Codes and No SIC Codes

Multiple Codes 20–39. TRI facilities may report up to six four-digit SIC codes that describe their operations. If all the processes or operations that are associated with a facility's releases or other waste management of a TRI chemical can be described by one SIC code, then only one SIC code is reported on the form. If several economic activities, designated by different SIC codes, describe the specific operations at a facility that are associated with releases or other waste management of a TRI chemical, then the facility will report those SIC codes (up to six) on the form it submits for that chemical.

Industrial facilities often conduct interrelated operations. They may, for example, manufacture distinct products using common or related feedstocks. Such products may be classified in similar but separate categories in the Standard Industrial Classification (SIC) system. Thus, many forms submitted to TRI contain more than one industrial classification. When TRI data are analyzed by industry—that is, by SIC code—forms that report more than one SIC code must be categorized separately because they do not fall into the individual industry groups.

Box 5-2: Multiple SIC Codes and No SIC Codes *(continued)*

The "multiple-codes" category represents forms that report in more than one two-digit SIC code within the manufacturing sector (SIC codes 20–39). For example, a facility may refine petroleum (SIC code 29) and then use that feedstock in the manufacture of chemicals (SIC code 28); it will report on its TRI forms SIC codes in both these industries—for example, SIC codes 2911, petroleum refining, and 2869, industrial organic chemicals. On forms with more than one SIC code, any SIC code that is not within manufacturing (that is, not within the SIC code range 20 to 39) is ignored when assigning a form to an industry category. For example, a form with SIC codes 2642 (manufacture of envelopes) and 5112 (wholesale trade—stationery and office supplies) would be included in SIC code 26.

Forms that have a SIC code within the manufacturing sector as well as a SIC code within the new industry sectors are included in the manufacturing sector SIC code if the facility reported to TRI before 1998. If the facility reported for the first time for 1998 with both original and new industry SIC codes, it is not included in the analyses in this chapter but is included in the analyses in Chapter 4 under the new industry code.

No Codes 20–39. Forms that report no SIC code within the manufacturing sector and have no SIC code belonging to a new industry group are included in these tables under the "No codes 20–39" category. Such forms may include, for example, submissions by federal facilities, all of which are required to report regardless of the SIC code covering their operations. This group also includes forms with no valid SIC code.

Chapter 2 presents a comparison of the reporting by the original industries with that of the new industries. In this chapter, total releases include all transfers to disposal as reported by the subset of TRI facilities that reported within the original industries. In Chapter 2, when presenting reporting by all TRI facilities, total releases on- and off-site do not include transfers to disposal sent to other TRI facilities that reported the amount as an on-site release. Some TRI facilities transfer off-site chemicals in waste to other TRI facilities for disposal on-site. When comparing all TRI facilities, such transfers are omitted to avoid counting the amounts twice, once as a transfer and once as an on-site release. (See Box 1-8 in Chapter 1 and Box 2-1 in Chapter 2 for an explanation and calculation of this duplication of off-site transfers to disposal.) Most of these transfers are from manufacturing facilities in the original industry sectors to hazardous waste facilities, a new industry sector. Therefore, such transfers are not omitted in the separate analyses of the original industries in this chapter.

TRI DATA BY INDUSTRY, 2000

In 2000, a total of 21,352 facilities in the original TRI industries submitted 74,131 forms, as shown in Table 5-1. The chemical manufacturing industry submitted the largest number of forms, 20,974. The fabricated metals industry ranked second, with 7,825 forms, followed by the primary metals industry, with 7,241 forms. Together, these three industries submitted nearly half (48.6 percent) of the forms for 2000 from the original industries covered by TRI.

On- and Off-site Releases, 2000

On- and off-site releases by the original industries totaled just under 2.37 billion pounds in 2000, and two industries, primary metals and chemical manufacturing, reported more than half of that total. As shown in Table 5-2, the primary metals industry reported 664.0 million pounds of total releases, and the chemical manufacturing industry reported 661.1 million pounds. These amounts represented 28.1 percent and 27.9 percent, respectively, of all on- and off-site releases reported by the original industries, as illustrated in Figure 5-1. The paper products industry ranked third for total on- and off-site releases, with 227.4 million pounds, or 9.6 percent of the total.

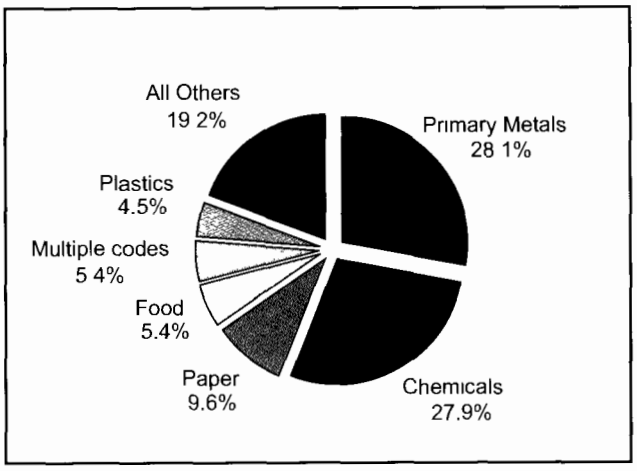
Three other industry groups reported more than 100 million pounds each. The food industry ranked fourth among original industries, with 126.9 million pounds, 5.4 percent of the total for all original industries. Multiple codes group ranked fifth, with

126.6 million pounds, 5.4 percent of the total for all original industries. The plastics industry had 105.4 million pounds of releases, or 4.5 percent of the total for all original industries (see Figure 5-1).

The primary metals industry ranked first for on-site land releases, with 217.7 million pounds. The primary metals industry also was the leading industry for transfers off-site to disposal, with 282.8 million pounds. The chemicals industry led all industries in total air emissions (277.5 million pounds), underground injections (203.9 million pounds), and surface water discharges (68.7 million pounds).

Figure 5-2 displays on- and off-site releases for the original industries with the largest total releases. Air releases were the largest release type for all of these industries except primary metals. In the primary metals industry, off-site releases (transfers off-site to disposal) and on-site land releases outweighed other release types. (Types of on-site land releases are described in Box 1-4 in Chapter 1.) For the food industry, surface water discharges (55.6 million pounds) were almost as large as air releases (59.8 million pounds). The chemicals industry reported concentrations in air releases (277.5 million pounds) and underground injections (203.9 million pounds).

Figure 5-1. TRI On-site and Off-site Releases, Original Industries, by Industry, 2000



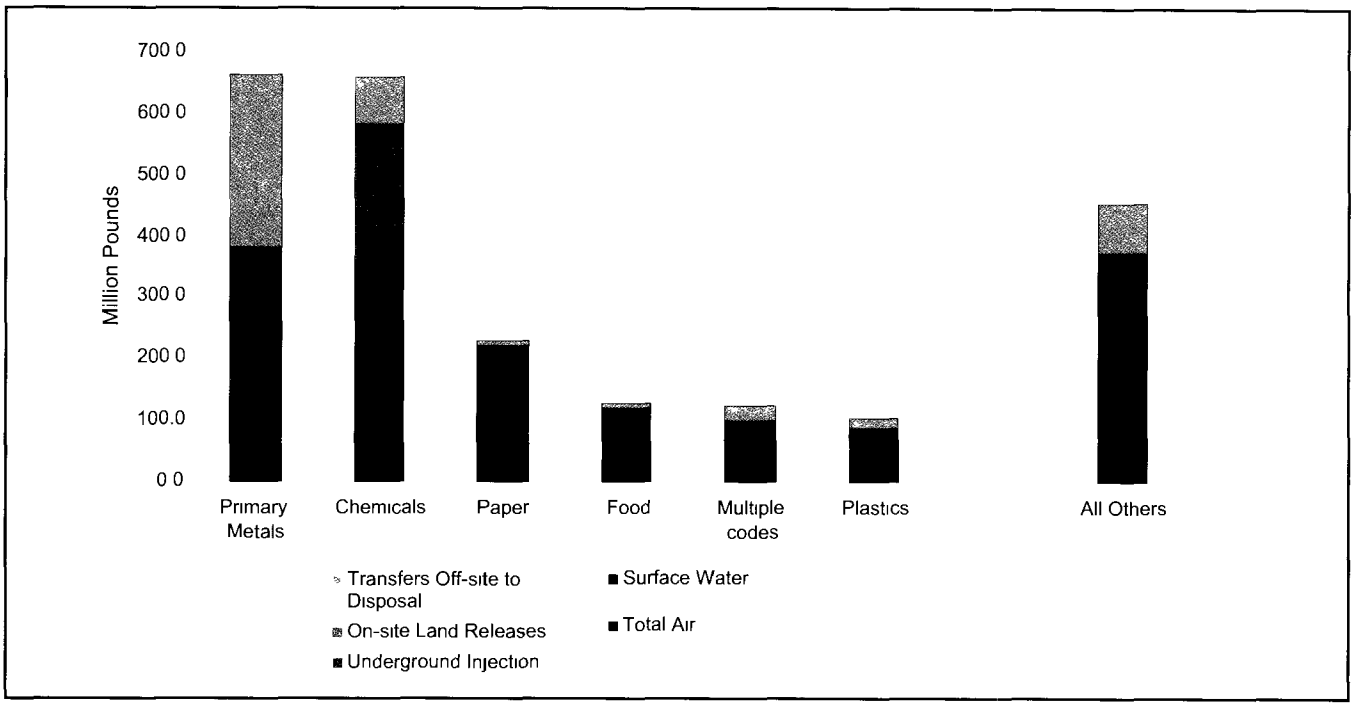
Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Forms that reported more than one 2-digit SIC code within the range 20 to 39 are assigned to the "multiple codes" category

Table 5-1: TRI Facilities and Forms, Original (Manufacturing) Industries, by Industry, 2000

SIC Code	Industry	Total Facilities Number	Total Forms Number	Form Rs Number	Form As Number
20	Food	1,710	3,488	2,244	1,244
21	Tobacco	27	83	83	0
22	Textiles	292	646	595	51
23	Apparel	15	38	37	1
24	Lumber	857	2,177	1,385	792
25	Furniture	324	703	649	54
26	Paper	496	2,972	2,894	78
27	Printing	202	436	411	25
28	Chemicals	3,745	20,974	17,345	3,629
29	Petroleum	550	4,134	3,788	346
30	Plastics	1,888	3,969	3,352	617
31	Leather	75	180	164	16
32	Stone/Clay/Glass	757	2,294	2,003	291
33	Primary Metals	1,948	7,241	6,454	787
34	Fabricated Metals	2,893	7,825	6,870	955
35	Machinery	1,109	2,778	2,419	359
36	Electrical Equip.	1,197	3,073	2,883	190
37	Transportation Equip	1,302	4,622	4,271	351
38	Measure/Photo	257	602	520	82
39	Miscellaneous	302	676	553	123
	Multiple codes 20-39	1,248	4,691	4,176	515
	No codes 20-39	158	529	477	52
	Total	**21,352**	**74,131**	**63,573**	**10,558**

Note· Facilities/forms that reported more than one 2-digit SIC code within the range 20 to 39 are assigned to the "multiple codes" category Facilities/forms with no 2-digit SIC code within the range 20 to 39 are assigned to the "no codes" category

Figure 5-2: Distribution of TRI On-site and Off-site Releases, Original Industries with Largest Totals, 2000



Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Forms that reported more than one 2-digit SIC code within the range 20 to 39 are assigned to the "multiple codes" category

Table 5-2: TRI On-site and Off-site Releases, Original (Manufacturing) Industries, by Industry, 2000

SIC Code	Industry	Air: Fugitive or Nonpoint Air Emissions Pounds	Air: Stack or Point Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection: Class I Wells Pounds	Underground Injection: Class II-V Wells Pounds
20	Food	21,772,275	38,064,056	55,613,128	852	1
21	Tobacco	48,865	2,315,580	561,468	0	0
22	Textiles	1,648,055	5,664,228	210,155	0	0
23	Apparel	43,806	431,458	0	0	0
24	Lumber	4,867,798	27,990,904	59,761	0	0
25	Furniture	2,017,268	10,144,346	29	0	0
26	Paper	12,253,113	172,376,575	20,072,572	0	0
27	Printing	8,814,631	9,942,864	370	0	0
28	Chemicals	74,456,975	203,066,347	68,741,956	203,697,451	178,604
29	Petroleum	18,720,208	27,987,745	18,002,188	2,355,783	54,723
30	Plastics	21,713,744	66,934,670	33,223	0	0
31	Leather	547,948	1,392,165	102,461	0	0
32	Stone/Clay/Glass	1,781,818	30,518,753	160,201	0	3,092
33	Primary Metals	18,743,949	75,378,342	68,484,434	975,929	0
34	Fabricated Metals	17,649,828	31,187,748	1,868,629	0	0
35	Machinery	4,361,400	5,778,169	82,251	0	0
36	Electrical Equip.	4,281,578	11,216,109	4,203,353	250	5
37	Transportation Equip.	16,935,519	66,059,098	214,466	0	0
38	Measure/Photo.	910,879	6,645,710	1,109,047	0	2
39	Miscellaneous	1,641,428	5,527,959	37,995	0	0
	Multiple codes 20-39	14,906,036	56,781,705	15,313,992	29,100	5
	No codes 20-39	1,494,822	1,571,388	498,491	0	505
	Total	**249,611,942**	**856,975,920**	**255,370,170**	**207,059,365**	**236,937**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Forms that reported more than one 2-digit SIC code within the range 20 to 39 are assigned to the "multiple codes" category Forms with no 2-digit SIC code within the range 20 to 39 are assigned to the "no codes" category

Top 20 Chemicals for On- and Off-site Releases

Table 5-3 lists the 20 TRI chemicals with the largest total releases in 2000 by the original industries. On- and off-site releases of the top 20 TRI chemicals totaled 1.81 billion pounds, 76.5 percent of the total 2.37 billion pounds for all chemicals.

Zinc compounds led all TRI chemicals, with releases totaling 309.5 million pounds. Off-site releases (transfers to disposal) totaling 201.6 million pounds constituted almost 65.1 percent of this total. As explained in Box 1-5 in Chapter 1, off-site releases of metals and their compounds include transfers to solidification/stabilization and to wastewater treatment, including transfers to POTWs. The second greatest source of releases for zinc compounds was other on-site land releases (that is, on-site land releases other than RCRA subtitle C landfills)—97.2 million pounds, or 31.4 percent of the total on- and off-site releases of zinc compounds.

Nitrate compounds ranked second in total releases, with 304.3 million pounds. Of that total, 231.7 million pounds, or 76.1 percent, were released through surface water discharges. Nitrate compounds constituted 90.7 percent of all surface water discharges for all chemicals. TRI facilities in the original industries also injected 47.1 million pounds of nitrate compounds into Class I underground wells on-site, the largest amount for that type of release.

Methanol ranked third in total on- and off-site releases, with 204.6 million pounds. Methanol ranked first for air emissions, with 182.3 million pounds. Air emissions constituted 89.1 percent of the total on- and off-site releases for methanol.

Table 5-2: TRI On-site and Off-site Releases, Original (Manufacturing) Industries, by Industry, 2000 *(continued)*

Industry	On-site Land Releases					Total On-site Releases	Off-site Releases	Total On- and Off-site Releases
	RCRA Subtitle C Landfills	Other Landfills	Land Treatment	Surface Impound-ments	Other Disposal		Transfers Off-site to Disposal	
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
Food	500	93,888	5,691,690	260,631	305,549	121,802,570	5,110,493	126,913,063
Tobacco	0	0	0	0	0	2,925,913	223,568	3,149,481
Textiles	0	1,798	14,195	140,506	129,155	7,808,092	715,069	8,523,161
Apparel	0	0	0	0	0	475,264	68,195	543,459
Lumber	3,975	62,839	3,480	87,827	21,413	33,097,996	1,480,071	34,578,067
Furniture	510	2,666	0	0	7,541	12,172,360	110,852	12,283,212
Paper	423,387	10,419,426	927,667	3,160,686	389,152	220,022,578	7,413,276	227,435,854
Printing	0	27,000	0	0	250	18,785,115	185,233	18,970,348
Chemicals	1,176,172	22,587,132	1,470,954	6,506,796	2,986,632	584,869,018	76,215,704	661,084,723
Petroleum	2	454,418	31,728	473,558	103,512	68,183,864	5,759,036	73,942,901
Plastics	224,258	557,513	0	5,800	6,657	89,475,865	15,876,935	105,352,800
Leather	0	0	0	4,013	250	2,046,837	1,606,029	3,652,866
Stone/Clay/Glass	560	4,274,881	1,012	116,818	366,285	37,223,419	7,072,185	44,295,604
Primary Metals	6,817,150	72,890,371	11,535	34,849,143	103,118,176	381,269,029	282,752,550	664,021,580
Fabricated Metals	185,205	268,527	18,783	2,129	302,313	51,483,161	26,013,911	77,497,072
Machinery	10,158	400,846	5,508	1,929,487	96,990	12,664,809	6,714,184	19,378,993
Electrical Equip	1,310,377	630,336	750	19,733	73,130	21,735,621	13,512,295	35,247,916
Transportation Equip.	30,717	281,934	1,401	238	101,443	83,624,816	13,055,301	96,680,117
Measure/Photo.	6,594	148	542	1	12,093	8,685,016	658,382	9,343,397
Miscellaneous	3,825	6,208	0	0	3,220	7,220,635	1,048,860	8,269,495
Multiple codes 20-39	203,403	2,482,478	430,545	5,110,287	5,976,287	101,233,838	25,407,627	126,641,465
No codes 20-39	73,002	70,885	1,254,065	1,043,091	1,621,620	7,627,869	734,091	8,361,960
Total	**10,469,795**	**115,513,294**	**9,863,854**	**53,710,743**	**115,621,667**	**1,874,433,686**	**491,733,848**	**2,366,167,533**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Forms that reported more than one 2-digit SIC code within the range 20 to 39 are assigned to the "multiple codes" category Forms with no 2-digit SIC code within the range 20 to 39 are assigned to the "no codes" category

Table 5-3: TRI On-site and Off-site Releases, Original (Manufacturing) Industries, 2000

CAS Number	Chemical	Total Air Emissions	Surface Water Discharges	Underground Injection: Class I Wells	Underground Injection: Class II-V Wells	On-site Land Releases: RCRA Subtitle C Landfills	On-site Land Releases: Other On-site Land Releases	Total On-site Releases	Off-site Releases: Transfers Off-site to Disposal	Total On- and Off-site Releases
		Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
	-- Zinc compounds	6,140,049	902,893	246,134	1,105	3,427,752	97,245,524	107,963,457	201,577,359	309,540,816
	-- Nitrate compounds	336,149	231,650,081	47,101,061	750	12,902	6,892,101	285,993,044	18,299,303	304,292,347
67-56-1	Methanol	182,267,111	3,744,637	14,268,916	79,757	20,418	1,396,507	201,777,346	2,853,731	204,631,077
7664-41-7	Ammonia	131,524,721	6,775,957	27,072,360	38,511	1,970	2,691,626	168,105,145	4,410,466	172,515,611
	-- Manganese compounds	1,673,484	5,078,261	9,513,796	250	1,046,423	54,893,918	72,206,132	51,137,331	123,343,463
108-88-3	Toluene	79,920,420	37,928	316,330	500	4,523	47,421	80,327,122	1,270,690	81,597,811
	-- Copper compounds	1,208,671	84,705	247,235	0	224,585	56,707,072	58,472,268	14,894,889	73,367,157
100-42-5	Styrene	57,153,754	3,351	260,005	0	38,624	145,565	57,601,299	2,187,323	59,788,622
1330-20-7	Xylene (mixed isomers)	56,709,188	73,110	75,393	750	8,439	24,460	56,891,340	991,070	57,882,410
7647-01-0	Hydrochloric acid	53,653,445	96,716	54,125	0	0	13,167	53,817,453	1,212,411	55,029,864
110-54-3	n-Hexane	52,550,376	12,484	112,886	0	624	4,232	52,680,602	34,531	52,715,133
7782-50-5	Chlorine	45,483,946	264,000	157,321	10,000	0	216,220	46,131,487	15,949	46,147,436
75-15-0	Carbon disulfide	40,584,051	3,699	17,456	0	372	2,502	40,608,080	2,800	40,610,880
	-- Lead compounds	912,965	37,692	212,480	0	528,230	11,884,359	13,575,726	26 364,344	39,940,070
78-93-3	Methyl ethyl ketone	33,840,908	40,413	200,487	5	6,686	23,376	34,111,875	883,861	34,995,736
	-- Glycol ethers	31,179,323	109,904	2,084	43,140	15,873	26,625	31,376,949	1,692,669	33,069,618
	-- Chromium compounds	424,116	116,272	1,442,625	0	172,221	13,380,103	15,535,337	17,338,149	32,873,486
75-09-2	Dichloromethane	30,635,855	10,016	108,170	0	50	747,916	31,502,007	259,330	31,761,337
7664-93-9	Sulfuric acid	28,578,774	18,305	807,650	0	0	13,211	29,417,940	222,032	29,639,972
7697-37-2	Nitric acid	2,294,904	51,764	11,877,808	0	7,641	301,982	14,534,099	10,837,468	25,371,567
	Subtotal (top 20 chemicals)	**837,072,211**	**249,112,188**	**114,094,322**	**174,768**	**5,517,333**	**246,657,887**	**1,452,628,709**	**356,485,705**	**1,809,114,414**
	Total (all chemicals)	**1,106,587,862**	**255,370,170**	**207,059,365**	**236,937**	**10,469,795**	**294,709,557**	**1,874,433,686**	**491,733,848**	**2,366,167,533**

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

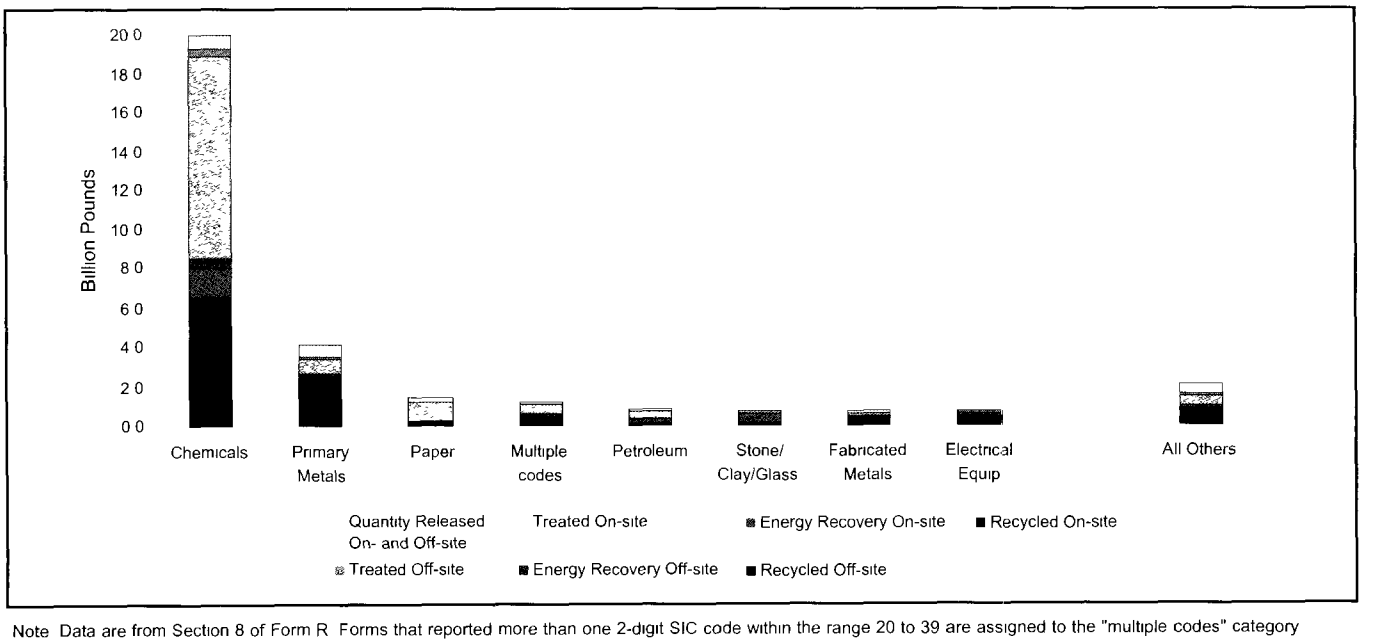
Ammonia ranked fourth overall, with 172.5 million pounds, and was second highest for air emissions (131.5 million pounds).

Waste Management Data, 2000

Quantities of TRI Chemicals in Waste

Facilities in the original TRI industries reported managing a total of 31.73 billion pounds of TRI chemicals in waste in 2000, as shown in Table 5-4.

Figure 5-3: Distribution of Quantities of TRI Chemicals in Waste Managed, Original Industries with Largest Total, 2000



Note Data are from Section 8 of Form R Forms that reported more than one 2-digit SIC code within the range 20 to 39 are assigned to the "multiple codes" category

Table 5-4: Quantities of TRI Chemicals in Waste Managed, Original (Manufacturing) Industries, by Industry, 2000

SIC Code	Industry	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-production-related Waste Managed Pounds
20	Food	286,456,551	4,831,566	342,139	209,050	143,183,492	29,360,328	131,484,341	595,867,466	449,623
21	Tobacco	2,662	42,777	0	0	1,501,246	600,509	3,146,288	5,293,482	0
22	Textiles	11,717,208	775,478	5,794,271	1,818,767	12,147,515	1,658,758	8,244,066	42,156,063	8
23	Apparel	74,180	70,792	0	58,443	1,117,182	23,029	529,307	1,872,933	0
24	Lumber	8,955,534	640,567	3,619,300	2,290,960	123,519,328	1,953,124	34,285,026	175,263,840	629,020
25	Furniture	1,727,954	5,683,002	54,815	2,552,357	1,130,238	494,045	12,266,649	23,909,060	550
26	Paper	95,180,618	2,385,627	167,025,426	7,213,292	927,977,776	45,784,176	227,431,329	1,472,998,244	7,826
27	Printing	204,219,124	5,521,013	518,128	3,627,364	129,961,583	2,157,676	19,269,605	365,274,493	14,326
28	Chemicals	6,399,051,563	179,639,658	1,446,904,943	436,758,808	10,503,372,943	324,680,430	656,887,750	19,947,296,093	2,994,757
29	Petroleum	83,798,320	46,582,980	270,886,324	1,670,791	362,669,777	9,236,169	74,048,433	848,892,793	218,321
30	Plastics	41,886,850	15,118,379	15,294,180	6,779,236	34,574,334	9,299,233	102,093,105	225,045,318	41,158
31	Leather	450,462	272,547	963	51,745	12,709,194	628,579	3,930,330	18,043,820	0
32	Stone/Clay/Glass	145,057,643	5,169,167	507,578,016	2,890,346	12,185,166	3,350,820	44,182,495	720,413,652	38,196
33	Primary Metals	1,734,891 916	770,504,069	166,306,921	4,175,811	761,362,143	36,439,786	638,451,235	4,112,131,881	33,371,714
34	Fabricated Metals	128,983,076	350,710,425	19,836,394	13,105,837	102,036,332	23,866,406	78,642,436	717,180,906	285,520
35	Machinery	10 024,243	85,520,260	227,524	2,103,734	6,373,558	4,071,382	19,130,118	127,450,819	108,404
36	Electrical Equip	184,269,559	347,571,006	14,604,903	15,661,081	76,763,476	28,260,386	33,890,659	701,021,070	75,475
37	Transportation Equip	19,174,666	126,026,494	772,552	11,166,517	29,348,263	12,993,734	95,289,907	294,772,133	56,561
38	Measure/Photo	2,231,746	10,680,830	261,430	2,276,854	41,936,344	2,122,340	9,440,147	68,949,692	2,452
39	Miscellaneous	7,424,360	12,882,293	4,259,115	1,943,842	4,279,428	3,015,112	8,553,056	42,357,206	208,542
	Multiple codes 20-39	285,619,629	186,128,065	61,998,972	32,066,863	478,415,055	29,983,935	127,678,573	1,201,891,092	373,477
	No codes 20-39	2,597,122	3,209,725	357,460	618,285	11,581,699	1,151,569	6,462,701	25,978,561	1,097,263
	Total	**9,653,794,985**	**2,159,966,719**	**2,686,643,776**	**549,039,983**	**13,778,146,072**	**571,131,526**	**2,335,337,556**	**31,734,060,618**	**39,973,193**

Note: Data are from Section 8 of Form R Forms that reported more than one 2-digit SIC code within the range 20 to 39 are assigned to the "multiple codes" category Forms with no 2-digit SIC code within the range 20 to 39 are assigned to the "no codes" category

Figure 5-3 shows production-related waste reported by the industries with the largest totals.

On-site treatment was the most common handling method, accounting for 13.78 billion pounds of the production-related waste managed in the original industries. On-site recycling was the second most-common method, accounting for 9.65 billion pounds of production-related waste. Together, these two methods constituted 73.8 percent of the total production-related waste managed. The third most common waste management method was on-site energy recovery, which accounted for 2.69 billion pounds. On- and off-site releases accounted for 2.34 billion pounds of the total waste managed and off-site recycling for 2.16 billion pounds.

The chemical manufacturing industry reported managing 19.95 billion pounds of total production-related waste in 2000, 62.9 percent of the total for all original industries combined. The chemical manufacturing industry also reported the largest quantities in all waste management categories except off-site recycling. Nearly 52.7 percent (10.50 billion pounds) of the chemical manufacturing industry's production-related waste was treated on-site. One facility in Louisiana reported 5.85 billion pounds, over half of the chemicals industry's on-site treatment for 2000. On-site recycling, the chemical industry's second most common waste management method, accounted for 32.1 percent, or 6.40 billion pounds, of the industry's waste. One facility in Alabama reported 2.08 billion pounds of on-site recycling, almost one-third of the chemicals industry's on-site recycling for 2000. On-site energy recovery totaled 1.45 billion pounds, or 7.3 percent of the industry's total production-related waste. The chemicals industry reported 656.9 million pounds released on- and off-site.

The primary metals industry ranked second among original industries for total production-related waste managed, with 4.11 billion pounds. On-site recycling accounted for the 42.2 percent of this total, or 1.73 billion pounds—second to the chemical manufacturing industry in this management category. The primary metals industry reported the largest quantity of off-site recycling (770.5 million pounds) and the second-largest quantity released on- and off-site

(638.5 million pounds, a little lower than the amount for chemical manufacturing).

The paper products industry reported the third-largest total production-related waste managed, 1.47 billion pounds. Nearly 63.0 percent of this amount (928.0 million pounds) was treated on-site, the second-largest quantity for on-site treatment, trailing chemical manufacturing.

One other industry group exceeded 1 billion pounds in total production-related waste: the multiple codes group, which reported a total of 1.20 billion pounds. Of that total, 39.8 percent (478.4 million pounds) was treated on-site, while 23.8 percent (285.6 million pounds) was recycled on-site.

Transfers Off-site for Further Waste Management/Disposal

As shown in Table 5-5, the original industries transferred a total of 3.69 billion pounds of TRI waste for further waste management and disposal in 2000.

The primary metals industry accounted for 28.7 percent (1.06 billion pounds) of the combined total transfers for all original industries. Within the primary metals industry, 70.5 percent (745.8 million pounds) of TRI transfers came from transfers to recycling, while other transfers off-site to disposal accounted for 26.7 percent (282.4 million pounds) of the industry's total.

Chemical manufacturing accounted for the next highest share—27.1 percent (999.9 million pounds)—of the combined total for all original industries. Of the chemical manufacturing industry's off-site transfers total, 43.0 percent (430.4 million pounds) came from transfers to energy recovery, 18.6 percent (185.7 million pounds) from transfers to treatment, and 16.6 percent (166.4 million pounds) from transfers to recycling.

The third-largest share of the total transfers off-site for further waste management and disposal came

Table 5-5: TRI Transfers Off-site for Further Waste Management/Disposal, Original (Manufacturing) Industries, by Industry, 2000

SIC Code	Industry	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs: Metals and Metal Compounds Pounds	Transfers to POTWs: Non-metal TRI Chemicals Pounds	Other Off-site Transfers* Pounds	Other Transfers Off-site to Disposal** Pounds	Total Transfers for Further Waste Management/ Disposal Pounds
20	Food	4,559,165	137,954	1,410,338	368,277	32,259,824	23,238	4,742,216	43,501,012
21	Tobacco	35,977	0	201,544	0	347,065	0	223,568	808,154
22	Textiles	985,229	1,816,468	252,254	95,840	1,344,313	0	619,229	5,113,333
23	Apparel	67,777	27,556	0	505	19,079	7,592	67,690	190,199
24	Lumber	849,710	2,421,729	2,033,883	38	223,065	0	1,480,033	7,008,459
25	Furniture	5,580,592	2,871,038	683,366	961	19,031	570	109,891	9,265,449
26	Paper	1,974,383	7,122,594	8,553,659	294,330	37,100,689	0	7,118,945	62,164,601
27	Printing	5,632,968	3,371,086	1,319,902	3,106	1,252,019	0	182,127	11,761,208
28	Chemicals	166,434,052	430,389,600	185,708,512	514,860	140,932,910	257,522	75,700,844	999,938,301
29	Petroleum	35,978,232	1,643,007	3,949,520	79,268	6,637,986	134	5,679,769	53,967,915
30	Plastics	15,098,531	6,665,214	2,219,318	77,650	6,785,934	3,195	15,799,285	46,649,127
31	Leather	264,205	47,264	38,313	363,808	622,943	0	1,242,221	2,578,754
32	Stone/Clay/Glass	5,105,737	2,986,481	993,361	72,130	4,251,622	750	7,000,055	20,410,135
33	Primary Metals	745,813,285	5,274,506	7,764,688	370,370	16,526,419	77,558	282,382,181	1,058,209,006
34	Fabricated Metals	356,072,638	13,132,601	5,509,549	367,190	19,710,261	163,884	25,646,720	420,602,844
35	Machinery	82,188,733	1,985,070	959,652	101,322	2,871,649	0	6,612,863	94,719,288
36	Electrical Equip	316,427,639	15,464,604	4,270,292	116,608	25,490,414	9,453,276	13,395,687	384,618,519
37	Transportation Equip	114,157,398	10,920,093	3,781,346	191,790	9,625,704	13,352	12,863,511	151,553,194
38	Measure/Photo	10,741,979	2,282,568	1,680,626	5,583	449,865	2,982	652,799	15,816,402
39	Miscellaneous	12,797,536	1,979,404	1,909,544	7,058	1,572,709	0	1,041,802	19,308,053
	Multiple codes 20-39	180,149,851	31,590,314	9,267,190	121,188	25,210,657	624,391	25,286,439	272,250,030
	No codes 20-39	3,806,728	362,112	372,387	1,770	817,302	2	732,322	6,092,622
	Total	**2,064,722,344**	**542,491,264**	**242,879,243**	**3,153,650**	**334,071,460**	**10,628,445**	**488,580,198**	**3,686,526,604**

Note: Total Transfers Off-site for Further Waste Management/Disposal are from Section 6 of Form R Forms that reported more than one 2-digit SIC code within the range 20 to 39 are assigned to the "multiple codes" category Forms with no 2-digit SIC code within the range 20 to 39 are assigned to the "no codes" category

from the fabricated metals industry, which had 11.4 percent (420.6 million pounds) of the overall total. Of the 420.6 million pounds, 84.7 percent (356.1 million pounds) came from transfers to recycling.

Of the 3.69 billion pounds of TRI transfers off-site for further waste management and disposal by original industries, 56.0 percent (2.06 billion pounds) was managed through transfers to recycling, 14.7 percent (542.5 million pounds) through transfers to energy recovery, and 13.3 percent (488.6 million pounds) through other transfers to off-site disposal. The primary metals industry accounted for 745.8 million pounds of the total 2.06 billion pounds managed through transfers to recycling, fabricated metals for 356.1 million pounds, and chemical manufacturing for 166.4 million pounds. In transfers to energy recovery, the second most-common management category, chemical manufacturing accounted for 430.4 million pounds, multiple codes for 31.6 million pounds, and electrical equipment for 15.5 million pounds.

Projected Quantities of TRI Chemicals Managed in Waste, 2000-2002

As described in Waste Management in Chapter 1, on each Form R that it submits, a facility reports actual waste management quantities for the current and prior years and projected quantities for the next two years. Table 5-6 outlines the current and projected quantities of TRI chemicals in waste in the original industries. In 2000, the original industries reported 31.73 billion pounds and projected totals of 32.5 billion pounds for 2001 and 32.9 billion pounds for 2002. These projections represent a 2.3 percent increase from 2000 to 2001 and a 3.6 percent increase from 2000 to 2002. The largest net increase from 2000 to 2002 was projected to come from the chemical manufacturing industry, which expects an increase of 865.5 million pounds. The second largest net increase (473.5 million pounds) was projected by the food industry—a 79.5 percent increase over its current total. From 2000 to 2002,

Table 5-6: Current Year and Projected Quantities of TRI Chemicals in Waste, Original (Manufacturing) Industries, by Industry, 2000-2002

SIC Code Industry	Total Production-related Waste Management				
		Projected			
	Current Year 2000 Pounds	2001 Pounds	2002 Pounds	Change 2000-2001 Percent	Change 2000-2002 Percent
20 Food	595,867,466	1,063,665,378	1,069,334,463	78.5	79.5
21 Tobacco	5,293,482	5,304,018	5,300,499	0 2	0 1
22 Textiles	42,156,063	38,425,114	38,866,165	-8 9	-7 8
23 Apparel	1,872,933	1,904,511	1,915,760	1 7	2 3
24 Lumber	175,263,840	193,796,679	216,863,727	10 6	23 7
25 Furniture	23,909,060	20,499,764	20,271,415	-14 3	-15 2
26 Paper	1,472,998,244	1,455,419,015	1,454,371,761	-1 2	-1 3
27 Printing	365,274,493	412,141,746	459,722,984	12 8	25 9
28 Chemicals	19,947,296,093	20,490,637,373	20,812,829,368	2 7	4.3
29 Petroleum	848,892,793	838,023,315	837,177,786	-1 3	-1 4
30 Plastics	225,045,318	204,991,937	200,216,622	-8.9	-11 0
31 Leather	18,043,820	17,403,042	17,268,876	-3 6	-4 3
32 Stone/Clay/Glass	720,413,652	709,637,376	733,980,890	-1 5	1.9
33 Primary Metals	4,112,131,881	3,853,723,459	3,892,322,299	-6 3	-5 3
34 Fabricated Metals	717,180,906	686,642,434	693,767,199	-4.3	-3 3
35 Machinery	127,450,819	122,999,198	124,244,174	-3 5	-2 5
36 Electrical Equip	701,021,070	748,598,423	668,504,967	6 8	-4 6
37 Transportation Equip	294,772,133	288,815,618	289,234,534	-2 0	-1 9
38 Measure/Photo	68,949,692	68,792,835	68,592,571	-0.2	-0.5
39 Miscellaneous	42,357,206	41,949,911	45,535,706	-1 0	7 5
Multiple codes 20-39	1,201,891,092	1,185,070,783	1,210,805,656	-1 4	0 7
No codes 20-39	25,978,561	20,732,979	20,427,442	-20 2	-21 4
Total	**31,734,060,618**	**32,469,174,909**	**32,881,554,865**	**2.3**	**3.6**

Note· Data are from Section 8 (Total of 8 1 through 8 7) of Form R for 2000 Current Year is Column B, 2001 is Column C and 2002 is Column D Forms that reported more than one 2-digit SIC code within the range 20 to 39 are assigned to the "multiple codes" category Forms with no 2-digit SIC code within the range 20 to 39 are assigned to the "no codes" category

food had the largest projected percent increase (79.5 percent), followed by printing (25.9 percent), and lumber (23.7 percent.)

These increases offset projected declines in the primary metals industry, which expected a decline of 219.8 million pounds, and an anticipated decline of 32.5 million pounds in the electrical equipment industry. The sharpest projected percentage reductions were reported by the no-codes group (down 21.4 percent), furniture (down 15.2 percent) and plastics (down 11.0 percent).

Source Reduction, 2000

The original industries submitted 63,573 Form R's, 17.1 percent (10,869) of which reported source reduction activities (see Table 5-7). As noted in Waste Management in Chapter 1, source reduction–an activity that prevents the generation of waste–is the preferred waste management option.

The furniture industry had the highest ratio of forms reporting source reduction activity (32.5 percent), followed by measurement/photographic industry (23.5 percent), printing (23.4 percent), and plastics (22.2 percent). The industries with the lowest ratios of reported source reduction activities were tobacco (2.4 percent), apparel (2.7 percent), and paper (10.2 percent). Most industries fell somewhere between 12 percent and 22 percent.

Good operating practices accounted for the largest number (6,095) of source reduction activities reported by the original industries. Process modifications accounted for the next largest number (3,704) while spill and leak prevention accounted for the third (2,690). The chemical manufacturing industry had the highest number of reported source reductions in every category but two—cleaning and degreasing (where fabricated metals did), and surface preparation and finishing (where transportation equipment did)—mainly because it submitted over one-quarter of the total Form R's.

Table 5-7: Number of Forms Reporting Source Reduction Activity, Original (Manufacturing) Industries, by Industry, 2000

		Forms Reporting Source Reduction Activity		Category of Source Reduction Activity							
SIC Code Industry	Total Form Rs		Percent of All Form Rs	Good Operating Practices	Inventory Control	Spill and Leak Prevention	Raw Materials Modifications	Process Modifications	Cleaning and Degreasing	Surface Preparation and Finishing	Product Modifications
	Number	Number	Percent	Number	Number	Number	Number	Number	Number	Number	Number
20 Food	2,244	344	15 3	250	22	110	11	96	14	4	2
21 Tobacco	83	2	2 4	0	0	0	2	0	0	0	0
22 Textiles	595	86	14 5	42	13	13	24	24	9	8	5
23 Apparel	37	1	2 7	1	0	0	0	0	0	0	0
24 Lumber	1,385	286	20 6	144	4	80	68	81	13	118	10
25 Furniture	649	211	32 5	99	31	38	38	26	4	168	15
26 Paper	2,894	294	10 2	147	18	27	94	112	7	13	37
27 Printing	411	96	23 4	45	8	2	39	30	1	2	5
28 Chemicals	17,345	3,179	18 3	1,935	512	1,051	446	1,171	141	10	353
29 Petroleum	3,788	438	11 6	196	22	384	5	190	6	0	0
30 Plastics	3,352	743	22 2	325	98	96	185	217	25	147	67
31 Leather	164	34	20 7	15	4	5	11	5	3	15	1
32 Stone/Clay/Glass	2,003	304	15.2	123	14	122	52	134	4	22	18
33 Primary Metals	6,454	798	12 4	477	69	176	104	311	25	37	23
34 Fabricated Metals	6,870	1,227	17 9	699	173	161	150	362	176	159	64
35 Machinery	2,419	283	11 7	157	32	29	25	88	14	54	26
36 Electrical Equip.	2,883	597	20 7	333	71	99	67	236	54	34	41
37 Transportation Equip	4,271	708	16 6	378	104	57	123	193	45	184	45
38 Measure/Photo.	520	122	23 5	83	24	15	20	47	8	2	13
39 Miscellaneous	553	121	21 9	55	10	18	25	53	7	21	6
Multiple codes 20-39	4,176	899	21 5	545	136	185	117	316	41	72	66
No codes 20-39	477	96	20 1	46	27	22	17	12	18	18	1
Total	**63,573**	**10,869**	**17.1**	**6,095**	**1,392**	**2,690**	**1,623**	**3,704**	**615**	**1,088**	**798**

Note: All source reduction activities on a form are counted in the corresponding category Totals do not equal the sum of the categories because forms may report more than one source reduction activity Forms that reported more than one 2-digit SIC code within the range 20 to 39 are assigned to the "multiple codes" category Forms with no 2-digit SIC code within the range 20 to 39 are assigned to the "no codes" category

YEAR-BY-YEAR COMPARISONS, BY INDUSTRY

Comparisons of TRI data across reporting years are made on the basis of chemicals that were reportable in all years with the same reporting definitions. This ensures that apparent increases or decreases from one year to another are not the result of changes in the list of TRI chemicals. **Making Year-to-Year Comparisons of TRI Data**, in Chapter 1, explains these multiyear analyses; an understanding of these issues is essential for accurate interpretation of the multiyear data presented in this chapter.

Progress in reducing releases and quantities of TRI chemicals in wastes in recent years is measured from 1995. Waste management data authorized under the federal Pollution Prevention Act of 1990 have been collected since 1991 and can be compared using that baseline. Comparisons of on-site and off-site releases can also be made for chemicals that were reportable in all years from 1988 to 2000.

On- and Off-site Releases, 1995–2000

Table 5-8 summarizes on- and off-site releases by the original TRI industries for 1995 through 2000. During this period, total on- and off-site releases decreased from 2.64 billion pounds to 2.35 billion pounds, a reduction of 11.2 percent. In this period, all the industries except food, tobacco, petroleum, stone/clay/glass, and primary metals reported declines in total on- and off-site releases.

In 1995, the chemical manufacturing industry reported the largest total on- and off-site releases of all original industry groups, while in 2000, the primary metals industry did. Even through the primary metals industry reported a 3.3 percent decline in total on- and off-site releases from 1999 to 2000, its reported total of 658.9 million pounds just edged the chemical manufacturing industry's total of 654.3 million pounds in 2000.

Table 5-8: TRI On-site and Off-site Releases, Original (Manufacturing) Industries, by Industry, 1995, 1998-2000

SIC Code Industry	Total On-site and Off-site Releases							
	1995	1998	1999	2000	Change 1999-2000		Change 1995-2000	
	Pounds	Pounds	Pounds	Pounds	Pounds	Percent	Pounds	Percent
20 Food	124,409,881	131,305,383	127,457,251	126,691,326	-765,925	-0.6	2,281,445	1.8
21 Tobacco	2,142,358	3,618,629	3,697,630	3,149,255	-548,375	-14 8	1,006,897	47 0
22 Textiles	18,793,736	12,106,019	9,868,811	8,431,366	-1,437,445	-14.6	-10,362,370	-55.1
23 Apparel	1,355,583	581,416	539,420	543,459	4,039	0 7	-812,124	-59 9
24 Lumber	36,212,408	35,338,015	35,763,255	34,460,629	-1,302,626	-3.6	-1,751,779	-4.8
25 Furniture	42,672,922	17,326,733	15,409,780	12,283,212	-3,126,568	-20 3	-30,389,710	-71 2
26 Paper	241,465,911	232,610,832	228,619,592	226,757,841	-1,861,751	-0 8	-14,708,070	-6 1
27 Printing	31,361,209	22,526,244	21,100,098	18,970,056	-2,130,042	-10 1	-12,391,153	-39 5
28 Chemicals	829,713,398	710,596,167	683,640,399	654,277,040	-29,363,359	-4.3	-175,436,358	-21.1
29 Petroleum	66,575,269	75,733,222	71,610,637	72,722,661	1,112,024	1 6	6,147,392	9.2
30 Plastics	128,190,533	112,611,114	108,109,665	105,126,604	-2,983,061	-2.8	-23,063,929	-18 0
31 Leather	4,851,489	4,835,113	4,390,175	3,633,866	-756,309	-17 2	-1,217,623	-25 1
32 Stone/Clay/Glass	37,115,328	45,800,207	43,549,185	43,544,949	-4,236	-0.01	6,429,621	17.3
33 Primary Metals	568,234,586	719,817,789	681,145,683	658,860,964	-22,284,719	-3 3	90,626,378	15 9
34 Fabricated Metals	107,249,940	87,377,255	82,082,358	77,476,395	-4,605,963	-5.6	-29,773,545	-27.8
35 Machinery	27,895,906	21,691,554	17,616,144	19,355,793	1,739,650	9 9	-8,540,113	-30 6
36 Electrical Equip.	45,648,957	34,311,899	35,415,211	35,085,702	-329,509	-0 9	-10,563,255	-23 1
37 Transportation Equip	123,586,611	102,969,406	105,073,370	96,651,699	-8,421,671	-8 0	-26,934,912	-21 8
38 Measure/Photo.	17,702,250	12,406,947	11,046,512	9,327,659	-1,718,853	-15.6	-8,374,591	-47.3
39 Miscellaneous	13,973,903	10,479,112	10,287,305	8,265,647	-2,021,658	-19 7	-5,708,256	-40 8
Multiple codes 20-39	159,175,346	128,847,304	129,179,844	124,595,039	-4,584,805	-3.5	-34,580,307	-21.7
No codes 20-39	15,681,124	6,613,518	7,944,836	8,353,441	408,605	5 1	-7,327,683	-46 7
Total	**2,644,008,648**	**2,529,503,878**	**2,433,547,161**	**2,348,564,604**	**-84,982,557**	**-3.5**	**-295,444,044**	**-11.2**

Note: Does not include PBT chemicals, vanadium and vanadium compounds **On-site Releases** are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Forms that reported more than one 2-digit SIC code within the range 20 to 39 are assigned to the "multiple codes" category Forms with no 2-digit SIC code within the range 20 to 39 are assigned to the "no codes" category

The chemical manufacturing industry's total has declined steadily from 829.7 million pounds in 1995 to 654.3 million pounds in 2000, a decline of 175.4 million pounds, or 21.1 percent. This drop accounted for 59.4 percent of the overall decline across all industries. The primary metals industry's total releases increased from 1995 to 1998 and declined from 1998 to 2000. This resulted in an increase of 90.6 million pounds, or 15.9 percent, from 1995 to 2000.

Outside of these two industries, no other original TRI industry reported a reduction or an increase of comparable size between 1995 and 2000. The next largest absolute reductions were in the multiple-codes group, from 159.2 million pounds in 1995 to 124.6 million pounds in 2000, a decline of 34.6 million pounds, and in the furniture industry, from 42.7 million pounds to 12.3 million pounds, a difference of 30.4 million pounds (and a 72.1 percent drop, the second highest percentage decline). Of the industries reporting net declines from 1995 to 2000, three—apparel, machinery, and no codes—reported increases from 1999 to 2000, with the increase for the machinery industry at 9.9 percent

Of the industries reporting increases from 1995 to 2000, primary metals had the highest, followed by the following industries: stone/clay/glass, which jumped from 37.1 million pounds to 43.5 million pounds (an increase of 6.4 million pounds, or 17.3 percent); petroleum, which grew from 66.6 million pounds to 72.7 million pounds (6.1 million pounds, or 9.2 percent); the food industry, which grew from 124.4 million pounds to 126.7 million pounds (2.3 million, or 1.8 percent); and tobacco, which grew from 2.1 million pounds to 3.1 million pounds (1.0 million pounds, or 47.0 percent). Of these five industries, however, only petroleum reported an increase from 1999 to 2000.

On- and Off-site Releases, 1988–2000

Table 5-9 summarizes original-industry data for the chemicals that have been reportable since 1988. Between 1988 and 2000, total on- and off-site releases decreased from 3.21 billion pounds to 1.66

Table 5-9: TRI On-site and Off-site Releases, Original (Manufacturing) Industries, by Industry, 1988, 1995 and 1998-2000

SIC Code	Industry	Total On- and Off-site Releases								
		1988	1995	1998	1999	2000	Change 1999-2000		Change 1988-2000	
		Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Percent	Pounds	Percent
20	Food	6,944,211	6,717,451	14,162,658	10,210,138	9,746,819	-463,319	-4 5	2,802,608	40 4
21	Tobacco	214,464	142,916	185,062	184,056	76,013	-108,043	-58 7	-138,451	-64 6
22	Textiles	36,798,254	15,917,509	10,262,528	7,973,352	7,062,171	-911,181	-11 4	-29,736,083	-80 8
23	Apparel	951,662	1,261,006	385,976	253,968	282,189	28,221	11 1	-669,473	-70 3
24	Lumber	32,847,467	31,591,926	32,271,682	33,202,605	31,550,495	-1,652,110	-5.0	-1,296,972	-3 9
25	Furniture	62,181,722	42,412,333	17,025,106	15,220,232	12,037,199	-3,183,033	-20 9	-50,144,523	-80 6
26	Paper	205,147,151	181,283,486	175,787,445	172,649,003	171,751,269	-897,734	-0.5	-33,395,882	-16 3
27	Printing	56,557,465	31,100,735	22,313,168	20,892,671	18,799,690	-2,092,981	-10 0	-37,757,775	-66 8
28	Chemicals	878,434,723	518,908,794	411,054,837	394,674,252	375,323,941	-19,350,311	-4 9	-503,110,782	-57 3
29	Petroleum	73,867,733	42,414,029	42,037,058	37,430,267	36,485,880	-944,387	-2 5	-37,381,853	-50 6
30	Plastics	160,557,448	114,824,012	100,127,539	97,555,503	94,324,024	-3,231,479	-3 3	-66,233,424	-41 3
31	Leather	10,089,020	4,418,337	4,266,247	3,807,119	3,053,149	-753,970	-19 8	-7,035,871	-69 7
32	Stone/Clay/Glass	37,870,869	21,906,904	29,486,910	27,639,210	27,405,786	-233,424	-0.8	-10,465,083	-27 6
33	Primary Metals	645,112,012	496,691,865	636,230,451	594,481,860	569,169,214	-25,312,646	-4 3	-75,942,798	-11 8
34	Fabricated Metals	159,992,832	95,507,792	80,038,030	75,398,918	70,036,965	-5,361,953	-7 1	-89,955,867	-56 2
35	Machinery	70,803,000	23,895,388	18,337,464	14,931,104	16,865,462	1,934,359	13 0	-53,937,538	-76 2
36	Electrical Equip.	128,579,658	32,893,633	24,696,235	24,320,252	24,153,550	-166,702	-0 7	-104,426,108	-81.2
37	Transportation Equip.	213,546,031	117,127,365	96,746,884	98,597,229	90,348,405	-8,248,824	-8 4	-123,197,626	-57 7
38	Measure/Photo.	56,724,774	12,564,695	6,922,539	5,981,095	4,519,920	-1,461,175	-24 4	-52,204,854	-92.0
39	Miscellaneous	31,785,682	13,390,421	10,045,878	9,648,500	7,519,640	-2,128,860	-22 1	-24,266,042	-76 3
	Multiple codes 20-39	302,921,350	123,471,621	89,116,906	87,995,470	84,308,841	-3,686,629	-4.2	-218,612,509	-72 2
	No codes 20-39	39,655,700	12,900,740	4,516,312	6,593,790	6,506,016	-87,774	-1 3	-33,149,684	-83 6
	Total	**3,211,583,228**	**1,941,342,958**	**1,826,016,915**	**1,739,640,594**	**1,661,326,638**	**-78,313,956**	**-4.5**	**-1,550,256,590**	**-48.3**

Note: Does not include delisted chemicals, chemicals added in 1990, 1994 and 1995, aluminum oxide, ammonia, hydrochloric acid, PBT chemicals, sulfuric acid, vanadium and vanadium compounds **On-site Releases** are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

billion pounds, a decline of 1.55 billion pounds, or 48.3 percent. The chemical manufacturing industry showed the largest absolute reduction, from 878.4 million pounds in 1988 to 375.3 million pounds in 2000, a decrease of 503.1 million pounds and a reduction of 57.3 percent over the period.

Three other industry groups reported reductions of more than 100 million pounds each between 1988 and 2000. Releases from the multiple-codes group fell from 302.9 million pounds to 84.3 million pounds, a decrease of 218.6 million pounds, or 72.2 percent. Transportation equipment reported the next largest decline—from 213.5 million pounds to 90.3 million pounds, a drop of 123.2 million pounds, or 57.7 percent. Electrical equipment reported the third-largest decline, from 128.6 million pounds to 24.2 million pounds, a decline of 104.4 million pounds, or 81.2 percent.

Only the food industry reported an increase—2.8 million pounds or 40.4 percent—from 1988 to 2000. This increase was largely attributable to a sharp rise between 1995 and 1998, when releases jumped from 6.7 million pounds to 14.2 million pounds. Releases have been declining since 1998, however, falling to 9.7 million pounds in 2000, a 4.5 percent decline from 1999.

TRI Chemicals Managed in Waste, 1995–2000

As shown in Table 5-10, facilities in the original TRI industries reported managing 22.52 billion pounds of production-related waste in 1995 and 31.68 billion pounds in 2000. This was an increase of 9.15 billion pounds or 40.6 percent.

The chemical manufacturing industry reported by far the largest absolute increase from 1995 to 2000, from 9.53 billion pounds to 19.93 billion pounds, a

Table 5-10: Total Production-related Waste Managed, Original (Manufacturing) Industries, by Industry, 1995, 1998-2000

SIC Code	Industry	Total Production-related Waste Managed							
		1995	1998	1999	2000	Change 1999-2000		Change 1995-2000	
		Pounds	Pounds	Pounds	Pounds	Pounds	Percent	Pounds	Percent
20	Food	431,359,039	1,299,632,863	977,098,745	595,027,804	-382,070,941	-39.1	163,668,765	37.9
21	Tobacco	3,061,366	5,897,772	5,044,066	5,293,256	249,190	4 9	2,231,890	72 9
22	Textiles	55,104,364	49,322,639	42,193,302	42,092,289	-101,013	-0.2	-13,012,075	-23.6
23	Apparel	2,229,053	1,899,082	1,790,511	1,872,933	82,422	4 6	-356,120	-16 0
24	Lumber	112,609,062	63,417,885	60,636,145	174,940,391	114,304,246	188.5	62,331,329	55 4
25	Furniture	60,757,734	32,951,128	28,263,228	23,909,060	-4,354,168	-15 4	-36,848,674	-60.6
26	Paper	1,758,747,785	1,474,424,792	1,547,311,639	1,472,133,106	-75,178,533	-4.9	-286,614,679	-16.3
27	Printing	295,015,578	300,592,517	317,757,576	365,274,201	47,516,625	15 0	70,258,623	23 8
28	Chemicals	9,531,079,050	10,610,180,475	11,851,608,126	19,931,380,390	8,079,772,264	68.2	10,400,301,340	109 1
29	Petroleum	946,991,407	1,057,822,318	1,112,664,133	845,902,331	-266,761,802	-24 0	-101,089,076	-10 7
30	Plastics	541,999,018	261,639,104	248,834,080	223,803,218	-25,030,863	-10.1	-318,195,800	-58.7
31	Leather	10,331,453	10,760,483	14,494,371	17,988,657	3,494,286	24 1	7,657,204	74 1
32	Stone/Clay/Glass	863,915,817	796,961,186	869,600,407	720,193,985	-149,406,422	-17.2	-143,721,832	-16.6
33	Primary Metals	4,092,313,701	3,618,085,603	3,462,562,546	4,091,037,918	628,475,372	18 2	-1,275,783	-0 03
34	Fabricated Metals	766,643,446	716,852,537	741,333,923	717,159,280	-24,174,643	-3.3	-49,484,166	-6.5
35	Machinery	171,028,929	148,328,509	130,326,475	127,394,633	-2,931,841	-2 2	-43,634,296	-25 5
36	Electrical Equip.	695,032,973	775,619,502	710,245,875	692,723,726	-17,522,149	-2.5	-2,309,247	-0.3
37	Transportation Equip	400,098,548	305,803,045	315,896,741	294,753,149	-21,143,592	-6 7	-105,345,399	-26 3
38	Measure/Photo.	79,470,374	74,991,553	72,007,926	68,926,561	-3,081,365	-4.3	-10,543,813	-13.3
39	Miscellaneous	52,420,998	51,012,507	48,989,359	42,345,735	-6,643,624	-13 6	-10,075,263	-19 2
	Multiple codes 20-39	1,536,786,434	1,080,538,131	1,053,591,719	1,196,476,277	142,884,559	13.6	-340,310,157	-22.1
	No codes 20-39	115,195,961	30,937,398	31,320,579	25,740,392	-5,580,187	-17 8	-89,455,569	-77 7
	Total	**22,522,192,090**	**22,767,671,028**	**23,643,571,472**	**31,676,369,292**	**8,032,797,820**	**34.0**	**9,154,177,202**	**40.6**

Note. Does not include PBT chemicals, vanadium and vanadium compounds Data are from Section 8 (total of 8 1 through 8 7) of Form R of year indicated Forms that reported more than one 2-digit SIC code within the range 20 to 39 are assigned to the "multiple codes" category Forms with no 2-digit SIC code within the range 20 to 39 are assigned to the "no codes" category

Six facilities in the food processing industry (SIC code 20) reported from 160 million pounds to 1 billion pounds each in on-site recycling of n-hexane in 1995, for a total of 3 7 billion pounds One facility, owned by the same company, reporting in the multiple codes group reported 298 million pounds of n-hexane on-site recycling for 1995 On their 1996 Form Rs, these facilities reported no on-site recycling of n-hexane On their 1996 Form Rs, these facilities also reported zero for on-site recycling of n-hexane for the prior year (1995) However, they have not revised their 1995 form These amounts of on-site recycling in 1995 have been omitted from this table

rise of 10.40 billion pounds, or 109.1 percent. Two facilities accounted for most of this increase; one facility in Louisiana reported an increase of 5.78 billion pounds from 1999 to 2000 and one facility in Alabama reporting for the first time in 2000 reported a total of 2.10 billion pounds.

The second largest increase came from the food industry, which grew from 431.4 million pounds to 595.0 million pounds, an increase of 163.7 million pounds, or 37.9 percent.

The multiple-codes group (forms reporting more than one two-digit SIC code) reported the largest reduction. This group's reported total production-related waste fell from 1.54 billion pounds in 1995 to 1.20 billion pounds in 2000, a decrease of 340.3 million pounds, or 22.1 percent. The plastics industry reported a decline of 318.2 million pounds, from 542.0 million pounds to 223.8 million pounds, a 58.7 percent reduction. The paper industry reported a reduction of 286.6 million pounds, or 16.3 percent, from 1.76 billion pounds to 1.47 billion pounds.

TRI Chemicals Managed in Waste, 1991–2000

As shown in Table 5-11, total production-related waste managed rose from 17.90 billion pounds in 1991 to 27.07 billion pounds in 2000, a 51.2 percent increase. This analysis addresses only the chemicals that were reportable in all years, 1991 to 2000.

The chemical manufacturing industry reported the largest absolute increase, from 6.86 billion pounds in 1991 to 17.03 billion pounds in 2000, a 148.4 percent increase. (This increase was attributable mainly to a 8.05 billion pound increase from 1999 to 2000. Two facilities accounted for most of this increase; one facility in Louisiana reported an increase of 5.72 billion pounds from 1999 to 2000 and one facility in Alabama reporting for the first time in 2000 reported a total of 2.09 billion pounds.)

The next largest absolute increase came from the primary metals industry, which reported an increase from 2.32 billion pounds in 1991 to 3.73 billion

Table 5-11: Total Production-related Waste Managed, Original (Manufacturing) Industries, by Industry, 1991, 1995, 1998-2000

SIC Code	Industry	Total Production-related Waste Managed								
		1991	1995	1998	1999	2000	Change 1999-2000		Change 1991-2000	
		Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Percent	Pounds	Percent
20	Food	33,999,041	54,141,374	73,327,309	64,806,206	65,282,265	476,059	0 7	31,283,224	92 0
21	Tobacco	51,388,971	169,261	193,470	185,491	114,855	-70,636	-38 1	-51,274,116	-99 8
22	Textiles	46,534,010	44,062,387	42,555,525	36,299,581	35,476,281	-823,300	-2.3	-11,057,729	-23 8
23	Apparel	2,284,779	2,106,913	1,632,284	1,398,336	1,538,261	139,925	10 0	-746,518	-32 7
24	Lumber	59,970,495	109,088,915	60,774,280	57,796,035	172,185,019	114,388,984	197 9	112,214,524	187 1
25	Furniture	61,313,913	60,041,900	32,468,776	27,898,979	23,534,815	-4,364,164	-15 6	-37,779,098	-61 6
26	Paper	1,381,509,976	1,309,447,550	1,279,224,236	1,351,217,732	1,284,744,343	-66,473,389	-4 9	-96,765,633	-7 0
27	Printing	258,847,784	291,681,009	299,280,020	315,758,204	363,222,733	47,464,529	15 0	104,374,949	40 3
28	Chemicals	6,857,485,226	7,305,301,562	8,429,285,235	8,978,153,622	17,030,948,445	8,052,794,823	89.7	10,173,463,219	148 4
29	Petroleum	1,166,216,924	814,910,097	870,881,910	894,536,528	650,636,005	-243,900,523	-27 3	-515,580,919	-44 2
30	Plastics	471,371,789	498,334,600	234,131,175	222,593,094	198,320,263	-24,272,831	-10.9	-273,051,526	-57 9
31	Leather	17,878,399	7,025,037	6,361,954	10,896,245	14,138,655	3,242,410	29 8	-3,739,744	-20 9
32	Stone/Clay/Glass	973,469,932	839,802,476	758,789,444	827,562,180	669,132,856	-158,429,324	-19 1	-304,337,076	-31 3
33	Primary Metals	2,317,597,793	3,167,815,587	3,272,651,054	3,110,708,684	3,730,816,695	620,108,011	19 9	1,413,218,902	61 0
34	Fabricated Metals	577,884,477	677,317,964	674,168,378	700,101,061	674,284,190	-25,816,871	-3 7	96,399,713	16 7
35	Machinery	262,193,714	156,997,708	136,375,429	118,802,917	118,026,002	-776,914	-0 7	-144,167,712	-55 0
36	Electrical Equip	672,856,572	586,137,703	672,087,448	633,961,724	610,318,347	-23,643,377	-3 7	-62,538,225	-9.3
37	Transportation Equip	378,514,811	374,494,485	284,724,261	298,103,253	276,574,380	-21,528,873	-7 2	-101,940,431	-26 9
38	Measure/Photo	116,364,141	69,758,884	62,991,744	60,441,697	58,304,352	-2,137,345	-3 5	-58,059,789	-49.9
39	Miscellaneous	67,631,917	49,513,834	48,102,733	46,406,012	39,786,012	-6,620,000	-14 3	-27,845,905	-41 2
	Multiple codes 20-39	1,914,392,898	1,272,915,429	871,706,223	879,093,234	1,027,164,630	148,071,397	16 8	-887,228,268	-46.3
	No codes 20-39	208,496,291	107,167,838	25,712,154	26,438,131	20,939,346	-5,498,785	-20 8	-187,556,945	-90 0
	Total	**17,898,203,853**	**17,798,232,513**	**18,137,425,041**	**18,663,158,946**	**27,065,488,750**	**8,402,329,804**	**45.0**	**9,167,284,896**	**51.2**

Note. Does not include delisted chemicals, chemicals added in 1994 and 1995, ammonia, hydrochloric acid, PBT chemicals, sulfuric acid, vanadium and vanadium compounds Data are from Section 8 (total of 8 1 through 8 7) of Form R of year indicated Forms that reported more than one 2-digit SIC code within the range 20 to 39 are assigned to the "multiple codes" category Forms with no 2-digit SIC code within the range 20 to 39 are assigned to the "no codes" category

pounds in 2000, a 1.41 billion-pound (61.0 percent) net increase. The only other industries to report increases from 1991 to 2000 were the lumber industry (up 112.2 million pounds); the printing industry (up 104.4 million pounds); the fabricated metals industry (up 96.4 million pounds); and the food industry (up 31.3 million pounds).

The increase of 10.17 billion pounds in the chemical manufacturing industry alone offset modest declines throughout most other industries, creating a net total increase of 9.17 billion pounds for all original industries combined. The multiple-codes group reported the largest absolute reduction in total production-related waste managed, from 1.91 billion pounds in 1991 to 1.03 billion pounds in 2000. The reduction of about 887.2 million pounds represented a 46.3 percent decline. The petroleum industry reported the second-largest decline, from 1.17 billion pounds in 1991 to 650.6 million pounds in 2000, a net decrease of 515.6 million pounds, or 44.2 percent. The stone/clay/glass industry ranked third among industries reporting reductions, reporting a decline of 304.3 million pounds from 1991 to 2000. Other significant declines were reported by the following industries: plastics (down 273.1 million pounds), no-codes (down 187.6 million pounds), machinery (down 144.2 million pounds), and transportation equipment (down 101.9 million pounds).

Economic Overview, by Industry, Multi-Year Comparisons

Table 5-12 presents production indexes for each industrial sector from 1991 to 2000. During this period, production increased 55.8 percent for U.S. manufacturing as a whole.

As shown in Table 5-12, overall manufacturing production continued to expand in 2000. However, several industry groups showed declines in production over 1999. Tobacco, textiles, leather and fabricated metals continued declines registered in 1998 or before. Lumber, paper, petroleum, plastics, stone/clay/glass, primary metals, machinery, and

Table 5-12: Industrial Production Indexes by Industry, 1990-2000

		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Total Index		100 0	103 1	106 6	112 5	117 9	123 1	131 0	136 5	141 3	151 0
Manufacturing		100 0	104 0	107 8	114 3	120 4	126 1	135 2	141 8	147 9	155 8
SIC Code	**Industry**										
20	Food	100.0	101.6	103 7	105 4	107.5	107 1	109.6	111 1	111 9	112.9
21	Tobacco	100 0	101 1	85 0	105 6	113 0	114 8	114 2	107 4	95 3	71 8
22	Textiles	100.0	107 9	113.6	119.3	118.9	117 3	120 7	119.6	119.6	87 7
23	Apparel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24	Lumber	100 0	105.8	106.7	112 1	114 2	116.5	121.7	125.4	128.7	111.3
25	Furniture	100 0	105 5	110 7	114 0	117 5	119 3	124 5	128 7	132 4	146 5
26	Paper	100.0	103.3	107.4	112 0	113.2	112 4	118.1	118 7	120.0	112.0
27	Printing	100 0	100 9	101 6	101 6	102 2	102 2	106 2	106 1	105 3	111 2
28	Chemicals	100 0	103 7	105.4	108.7	111 4	113 9	118 9	119.4	121.9	130.6
29	Petroleum	100 0	100 9	103 8	103 6	105 4	107 8	111 8	114 3	115 7	109 4
30	Plastics	100.0	110 3	117.9	128.4	132.0	135.9	141.6	146.9	151.8	151 6
31	Leather	100 0	101 6	102 6	95 1	88 3	88 9	85 0	78 4	70 9	69 6
32	Stone/clay/glass	100.0	102 9	105 0	111 0	114.3	117.9	124.0	127.3	130.6	130.5
33	Primary metals	100 0	103 4	108 7	117 7	120 2	123 7	131 0	129 9	130 9	121 0
34	Fabricated metals	100.0	104 0	108.5	116 6	121.0	124 9	131.1	133.9	133 8	137 2
35	Machinery	100 0	104 8	115 4	131 7	150 6	167 3	186 9	216 4	241 2	268 7
36	Electrical Equip.	100.0	111 6	122 1	145 6	184.9	230 6	290 2	351 7	435.5	718.3
37	Transportation Equip	100 0	103 6	107 3	111 4	110 6	111 5	121 3	126 0	126 8	116 9
38	Measure/Photo.	100.0	100.2	101.0	100.0	103.8	107.8	109.8	112.8	116.7	123.9
39	Miscellaneous	100 0	101 6	107 4	111 8	115 5	120 7	127 9	119 2	129 4	133 3

Note. From 2000 Statistical Abstract of the United States, No 1238 Industrial Production Indexes, by Industry 1990 to 1999 (Source http //www census gov/prod/www/statistical-abstract-us html, accessed February 24, 2001) and Board of Governors of the Federal Reserve System, Industrial Production and Capacity Utilization, Statistical Release G17, Table 2a (http //www federalreserve gov/releases/G17)

NA - data not provided

transportation equipment all showed declines from 1999 to 2000 where increases were recorded in prior years. The overall increase in manufacturing production was lead by the electrical/electronic equipment manufacturers (SIC code 36), while the food, furniture, printing, chemical manufacturing, measurement/photographic and miscellaneous manufacturing industries also showed increases.

Table 5-13 compares the change in manufacturing production since 1991 with the change in TRI quantities released on- and off-site and in TRI total production-related waste managed. As shown in Table 5-13, the quantity released on- and off-site steadily decreased (except for a very small increase between 1996 and 1997), even as manufacturing production expanded. Overall, while manufacturing production rose by 55.8 percent from 1991 to 2000, TRI facilities reported a decrease of 31.1 percent in quantity released on- and off-site.

Although the total quantity of production-related waste that TRI facilities managed rose from 1991 to 1999, the increase was considerably smaller than the nation's increase in manufacturing production. While manufacturing production increased 47.9 percent from 1991 to 1999, TRI production-related waste decreased in four years and increased in four years during that period for an overall increase of 4.3 percent.

However, TRI production-related waste saw a large increase from 1999 to 2000, of 45.0 percent while manufacturing production increased 7.9 percent during that same period. Two facilities in the chemical manufacturing industry accounted for most of the 8.40 billion pound increase from 1999 to 2000; one facility in Louisiana reported an increase of 5.72 billion pounds from 1999 to 2000 and one facility in Alabama reporting for the first time in 2000 reported a total of 2.09 billion pounds.

Table 5-13: Percentage Change in Manufacturing Production and in TRI Quantities in Waste Managed, 1991-2000

	1991-1992	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997	1997-1998	1998-1999	1999-2000
Manufacturing Production	4 0	3 8	6 5	6 0	5 7	9.1	6.5	6.1	7.9
TRI Quantity Released On- and Off-site	-8.4	-7.6	-1.2	-3 2	-1 6	0 4	-4 5	-4.5	-5 4
TRI Total Production-related Waste Managed	-2 4	-0 6	6.6	-3.8	-1 5	2.9	0.6	2 9	45.0

Note: From 2000 Statistical Abstract of the United States, No 1238 Industrial Production Indexes, by Industry 1990 to 1999 (Source http //www census gov/prod/www/statistical-abstract-us html, accessed February 24, 2001) and Board of Governors of the Federal Reserve System, Industrial Production and Capacity Utilization, Statistical Release G17, Table 2a (http //www federalreserve gov/releases/G17)

Chapter 6

Toxics Release Inventory Data for Federal Facilities

Chapter 6

Toxics Release Inventory Data for Federal Facilities

This chapter provides analyses of 2000 TRI data as reported by federal facilities. Federally owned facilities that are operated by federal agencies or contractors are required to report to TRI, regardless of SIC code, pursuant to Executive Order 13148. Federal facilities have been required to report since the 1994 reporting year.

Chapter 1 explains types of releases and other waste management activities, described in this chapter, and provides important information on factors to be considered when using TRI data.

Tables in this chapter list the federal agencies that have facilities reporting to TRI. Department of Defense (DOD) data are presented for DOD as a whole and for each defense agency. In addition, Environmental Protection Agency (EPA) data are presented for EPA as a whole and for EPA Fund-lead Superfund sites separately from other EPA facilities.

2000 TRI DATA FOR FEDERAL FACILITIES

In 2000, a total of 153 federal facilities submitted 646 TRI forms, as shown in Table 6-1. Of these, 83 facilities were owned or operated by the Department of Defense (DOD), 21 by the Department of Energy (DOE) and 17 by the Tennessee Valley Authority (TVA).

DOD agencies submitted 271 forms. These DOD submissions included 131 reports by Army facilities, 59 reports by Air Force facilities and 51 reports by Navy facilities. DOE facilities submitted 82 forms, and TVA facilities submitted 224 forms.

On- and Off-site Releases, 2000

All TRI Chemicals

As is also shown in Table 6-1, federal facilities reported on- and off-site releases totaling 81.4 million pounds. The bulk of the releases, 79.9 million pounds, occurred on-site. Off-site releases totaled 1.5 million pounds.

Tennessee Valley Authority facilities reported 70.3 million pounds of on- and off-site releases. This amount represented 86.5 percent of all releases by all federal facilities. It included the largest amounts in all on-site release types, except for 505 pounds of underground injection by the Energy Department. TVA's releases included 51.5 million pounds of air emissions and 16.7 million pounds of other on-site land releases (that is, on-site land releases to other than RCRA subtitle C landfills).

Together, the Department of Defense agencies reported 7.9 million pounds of total releases, including 2.9 million pounds of air emissions, 2.3 million pounds of other on-site land releases (that is, on-site land releases to other than RCRA subtitle C landfills), and 2.0 million pounds of surface water discharges. These DOD facilities also reported over 627,000 pounds transferred off-site for disposal. Total releases from DOD facilities represented 9.7 percent of all releases by all federal facilities.

Within the DOD, Army releases of 5.5 million pounds consisted of on-site land releases of 2.0 million pounds, surface water discharges of 1.9 million pounds and air emissions of 1.4 million pounds. The Air Force's total of 1.4 million pounds consisted principally of air emissions (about 1.2 million pounds). The Navy reported over 934,500 pounds

Table 6-1: TRI On-site and Off-site Releases by Agency, 2000: Federal Facilities

			On-site Releases							Off-site Releases	
					Underground Injection		On-site Land Releases				
Federal Agency	Total Facilities	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
	Number	Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
Department of Defense	83	271	2,943,814	2,008,550	0	0	9,000	2,300,806	7,262,170	627,458	7,889,628
Air Force	15	59	1,190,250	125,828	0	0	0	253	1,316,331	109,996	1,426,327
Army	38	131	1,351,755	1,876,697	0	0	9,000	2,033,782	5,271,234	215,087	5,486,321
Army Corps of Engineers	2	8	0	77	0	0	0	12,978	13,055	0	13,055
Defense Logistics	1	5	4,156	0	0	0	0	0	4,156	0	4,156
Defense Stockpile	5	7	0	0	0	0	0	0	0	0	0
Marines	6	9	22,446	0	0	0	0	0	22,446	632	23,078
Military Academy	1	1	2,169	0	0	0	0	0	2,169	0	2,169
Navy	15	51	373,038	5,948	0	0	0	253,793	632,779	301,742	934,521
Department of Energy	21	82	450,006	93,843	0	505	0	193,774	738,128	22,189	760,317
Department of Interior	5	5	750	4,915	0	0	0	10,781	16,446	0	16,446
Department of State	1	1	0	250	0	0	0	0	250	0	250
Department of Transportation	1	10	14	0	0	0	0	0	14	54	68
Department of Treasury	8	16	213	0	0	0	0	111,562	111,775	22,274	134,049
Environmental Protection Agency	5	11	0	33,243	0	0	0	1,065,934	1,099,177	0	1,099,177
Environmental Protection Agency	3	7	0	0	0	0	0	0	0	0	0
EPA Fund-Lead Superfund Sites	2	4	0	33,243	0	0	0	1,065,934	1,099,177	0	1,099,177
National Aeronautics and Space Administration	5	12	99,305	0	0	0	0	0	99,305	723	100,028
Tennessee Valley Authority	17	224	51,537,006	1,370,030	0	0	0	16,662,532	69,569,568	779,833	70,349,401
US Department of Agriculture	4	5	0	0	0	0	0	496,271	496,271	0	496,271
US Enrichment Corporation	1	7	507,101	122	0	0	0	11	507,233	0	507,233
Veterans Administration	2	2	3,653	0	0	0	0	0	3,653	0	3,653
Total for Federal Facilities	**153**	**646**	**55,541,862**	**3,510,953**	**0**	**505**	**9,000**	**20,841,670**	**79,903,991**	**1,452,531**	**81,356,522**

Note. On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

with the largest off-site transfers to disposal of all DOD agencies (301,700 pounds).

The EPA Fund-Lead Superfund sites reported almost 1.1 million pounds, primarily as on-site land releases. Over 33,200 pounds were reported as discharged to surface water. The on-site land releases were a result of clean-up activities at large, abandoned mining sites.

Federal facilities may report activities within either the new or the original industry sectors, which are presented in Chapters 4 and 5. Box 6-1 briefly summarizes these activities for federal facilities.

PBT Chemicals

For the 2000 reporting year, the reporting criteria were changed for persistent bioaccumulative toxic (PBT) chemicals. TRI was expanded to include new PBT chemicals and reporting thresholds were lowered for both the newly-added PBT chemicals and certain PBT chemicals already on the TRI list. Chapter 3 presents the data for 2000 for PBT chemicals for all TRI facilities.

Federal facilities reported almost 15,600 pounds of releases of PBT chemicals on 93 forms in 2000, as shown in Table 6-2. Almost 9,500 pounds (60.8 percent) were air emissions. Another 3,900 pounds were off-site releases (transfers off-site to disposal) and almost 1,600 pounds were other on-site land releases (that is, on-site land releases to other than RCRA subtitle C landfills). There were also over 600 pounds discharged into surface waters on-site.

Facilities of the Tennessee Valley Authority reported the largest releases of PBT chemicals, almost 6,900 pounds or 44.1 percent of all releases of PBT chemicals reported by federal facilities in 2000. Most of the TVA releases of PBT chemicals were on-site as air emissions (over 4,700 pounds or 68.6 percent of total releases for TVA).

Department of Energy facilities reported the second largest amount of releases of PBT chemicals in 2000, with over 4,700 pounds or 30.3 percent of the total for all federal facilities. Most of the Department of Energy's releases were off-site releases (transfers off-site to disposal). DOE facilities reported over 3,700 pounds of off-site releases,

Box 6-1: Federal Facilities Reporting in Original and New Industry Sectors

Standard Industrial Classification (SIC) codes are used throughout the federal government to classify economic activity by industry. Facilities in the manufacturing sectors—that is, SIC codes 20 through 39—have been required to report releases since the TRI program began. Federal facilities have been required to report to TRI since 1994, regardless of their SIC code. In 1998, seven additional industries began reporting.

Chapter 4 describes reporting within the new industry sectors. Twenty-three federal facilities reported activities within the new industry sectors on 246 forms for 2000. These included 16 Tennessee Valley Authority facilities reporting 70.3 million pounds of total on- and off-site releases in the electric utility sector, 1 Defense Logistics facility reporting almost 4,200 pounds in the chemical wholesale distributors sector, 3 Department of Energy facilities reporting 12,500 pounds in the petroleum terminals/bulk storage sector, and 1 Department of Energy facility reporting 3,200 pounds in the hazardous waste/solvent recovery sectors. One Department of Energy facility and one Navy facility each reported less than 10 pounds of releases in the electric utilities sector.

Chapter 5 describes reporting from the original industry sectors. These include manufacturing activities as well as activities, such as those at federal facilities, not designated as falling within the manufacturing or new industry sectors. All federal facilities, except those listed above, are included in the amounts described in Chapter 5. For 2000, there were 130 federal facilities reporting 11.0 million pounds on 400 forms falling within the original industry sector analysis in this report.

Table 6-2: TRI On-site and Off-site Releases of PBT Chemicals by Agency, 2000: Federal Facilities

		On-site Releases							Off-site Releases	
				Underground Injection		On-site Land Releases				
Federal Agency	Total Forms	Total Air Emissions	Surface Water Discharges	Class I Wells	Class II-V Wells	RCRA Subtitle C Landfills	Other On-site Land Releases	Total On-site Releases	Transfers Off-site to Disposal	Total On- and Off-site Releases
	Number	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
Department of Defense	20	189 23	5 00	0 00	0 00	0 00	31 00	225 23	26 57	251 80
Air Force	7	39 34	0 00	0 00	0 00	0 00	0 00	39 34	0 00	39 34
Army	10	141 01	5 00	0 00	0 00	0 00	31 00	177.01	22 10	199 11
Army Corps of Engineers	0	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Defense Logistics	0	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Defense Stockpile	0	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Marines	0	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Military Academy	0	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Navy	3	8.88	0 00	0 00	0 00	0.00	0.00	8.88	4.47	13 35
Department of Energy	20	895 26	35 60	0 00	0 00	0 00	45 00	975 86	3,736 32	4,712 18
Department of Interior	0	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Department of State	0	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Department of Transportation	2	13 85	0 00	0 00	0 00	0 00	0 26	14 11	54 23	68 34
Department of Treasury	0	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Environmental Protection Agency	5	0.00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Environmental Protection Agency	5	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
EPA Fund-Lead Superfund Sites	0	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
National Aeronautics and Space Administration	0	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Tennessee Valley Authority	44	4,706 49	560 10	0 00	0 00	0 00	1,486 60	6,753 19	102 90	6,856 09
US Department of Agriculture	0	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
US Enrichment Corporation	1	0 60	0 00	0 00	0 00	0.00	10 60	11 20	0 00	11 20
Veterans Administration	1	3,653 00	0 00	0 00	0 00	0 00	0 00	3,653 00	0 00	3,653 00
Total for Federal Facilities	93	9,458 44	600 70	0 00	0 00	0 00	1,573 46	11,632 59	3,920 02	15,552 61

Note: ***On-site Releases*** *are from Section 5 of Form R* ***Off-site Releases*** *are from Section 6 (transfers off-site to disposal) of Form R* **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

79.3 percent of total releases of PBT chemicals from DOE facilities. The Veterans Administration reported almost 3,700 pounds of releases of PBT chemicals in 2000, all of which were air emissions.

Waste Management Data, 2000

Quantities of TRI Chemicals in Waste

Federal facilities reported managing 211.2 million pounds of TRI chemicals in production-related waste in 2000, as shown in Table 6-3 . The largest waste management types reported by federal facilities were on- and off-site releases (79.6 million pounds) and on-site treatment (59.1 million pounds). They also reported 46.6 million pounds recycled off-site and 25.3 million pounds recycled on-site.

Tennessee Valley Authority facilities accounted for 119.6 million pounds of production-related waste managed, or 56.6 percent of the total for all federal facilities in 2000. TVA facilities reported 70.3 million pounds released on- and off-site, 88.4 percent of the total quantity released on- and off-site by federal facilities. TVA facilities also reported 49.2 million pounds treated on-site, 83.2 percent of the total treated on-site by federal facilities.

Department of Defense facilities reported the second-largest quantity of production-related waste, 43.7 million pounds or 20.7 percent of the total for all federal facilities in 2000. The Army reported a total of 37.6 million pounds with 23.9 million pounds recycled on-site, 4.9 million pounds released on- and off-site, 4.5 million pounds treated on-site and 4.2 million pounds recycled off-site.

The Treasury Department ranked third among federal agencies for total production-related waste, with 40.7 million pounds, or 19.3 percent of the total for all federal facilities in 2000. Most (40.6 million pounds) of this amount was reported as recycled off-site.

Quantities of PBT Chemicals in Waste

Federal facilities reported managing almost 25,600 pounds of PBT chemicals in waste in 2000, as shown in Table 6-4. Over half (almost 14,400 pounds or 56.3 percent) was released on- and off-

Table 6-3: Quantities of TRI Chemicals in Waste Managed by Agency, 2000: Federal Facilities

	Recycled		Energy Recovery		Treated				
Federal Agency	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-production-related Waste Managed Pounds
Department of Defense	24,854,370	4,576,522	490	93,891	6,487,002	451,231	7,238,496	43,702,002	803,210
Air Force	33,210	103,000	0	14,220	1,111,397	249,620	1,422,605	2,934,052	3,420
Army	23,898,063	4,244,172	0	36,682	4,514,125	66,188	4,886,546	37,645,776	748,730
Army Corps of Engineers	0	1,443	0	0	0	0	13,055	14,498	0
Defense Logistics	907,775	0	0	0	0	0	4,156	911,931	0
Defense Stockpile	0	0	0	0	0	0	0	0	0
Marines	9,818	71,242	490	20,840	0	4,864	23,045	130,299	32
Military Academy	0	0	0	9,890	0	0	2,169	12,059	0
Navy	5,504	156,665	0	12,259	861,480	130,559	886,919	2,053,386	51,028
Department of Energy	284,270	1,376,152	0	1,542	2,333,918	12,969	749,741	4,758,592	1,625,758
Department of Interior	0	0	0	0	0	0	24,569	24,569	0
Department of Transportation	0	127	0	0	0	0	68	196	0
Department of State	0	0	0	0	56,250	5,000	479	61,729	0
Department of Treasury	0	40,581,106	0	0	37	0	136,122	40,717,265	0
Environmental Protection Agency	0	0	0	0	996,000	325	5,260	1,001,585	103,177
Environmental Protection Agency	0	0	0	0	0	325	0	325	0
US EPA Fund-Lead Superfund Sites	0	0	0	0	996,000	0	5,260	1,001,260	103,177
National Aeronautics and Space Administration	129,843	7,610	0	13,108	19,481	12,684	108,564	291,290	53,000
Tennessee Valley Authority	0	82,400	0	0	49,167,700	0	70,327,919	119,578,019	0
US Department of Agriculture	0	0	0	0	0	0	495,858	495,858	0
US Enrichment Corporation	0	0	0	0	48,100	0	507,255	555,355	0
Veterans Administration	0	0	0	0	0	0	3,653	3,653	0
Total for Federal Facilities	**25,268,483**	**46,623,917**	**490**	**108,541**	**59,108,488**	**482,209**	**79,597,985**	**211,190,113**	**2,585,145**

Note: Data are from Section 8 of Form R

site. Another 38.5 percent (over 9,800 pounds) was treated on-site, smaller amounts were treated off-site and recycled on- and off-site. No PBT chemicals were reported as burned for energy recovery on- or off- site in 2000.

Department of Energy facilities reported 14,150 pounds of PBT chemicals managed in waste in 2000, 55.3 percent of the total for all federal facilities. Over 69.5 percent (over 9,800 pounds) of the total production-related waste reported for PBT chemicals by Department of Energy facilities was treated on-site, and 24.4 percent (over 3,400 pounds) was released on- and off-site.

Facilities of the Tennessee Valley Authority reported almost 6,900 pounds of PBT chemicals in production-related waste managed in 2000. This represented 26.8 percent of the total for all federal facilities. All of this was released on- and off-site.

Transfers Off-site for Further Waste Management/Disposal

Table 6-5 summarizes reporting by federal facilities of transfers off-site for further waste management and disposal. These transfers totaled 49.0 million pounds in 2000. Much of this amount (47.0 million pounds or 95.8 percent) was transferred off-site to recycling; the category of other off-site transfers to disposal accounted for 1.5 million pounds.

Treasury Department facilities reported the largest total transfers off-site for further waste management and disposal in 2000. Over 99.9 percent of the 40.6 million pounds of transfers by the Treasury Department was sent off-site to recycling.

The Department of Defense facilities reported 5.9 million pounds of chemicals in waste sent off-site for further waste management and disposal in 2000. Over 4.7 million pounds of this was sent off-site for recycling, primarily by Army facilities. Department of Energy facilities reported 1.5 million pounds sent off-site for further waste management and disposal, with most of it sent for recycling.

Table 6-4: Quantities of TRI PBT Chemicals in Waste Managed by Agency, 2000: Federal Facilities

	Recycled		Energy Recovery		Treated				
Federal Agency	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-production-related Waste Managed Pounds
Department of Defense	0 00	22 52	0 00	0 00	0 13	0 30	359 67	382 62	0 00
Air Force	0 00	0 00	0 00	0 00	0 13	0 00	39 35	39 48	0 00
Army	0 00	0 02	0 00	0 00	0 00	0 30	199.01	199 33	0 00
Army Corps of Engineers	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Defense Logistics	0 00	0 00	0 00	0 00	0 00	0.00	0.00	0 00	0 00
Defense Stockpile	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Marines	0 00	0 00	0.00	0 00	0.00	0 00	0 00	0 00	0 00
Military Academy	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Navy	0 00	22.50	0 00	0.00	0.00	0 00	121 31	143 81	0 00
Department of Energy	270 00	381 67	0 00	0 00	9,841 13	209 66	3,447 64	14,150 10	1,026 47
Department of Interior	0 00	0 00	0 00	0 00	0.00	0 00	0.00	0 00	0 00
Department of State	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Department of Transportation	0.00	127 35	0 00	0 00	0 00	0 00	68 38	195 73	0 00
Department of Treasury	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Environmental Protection Agency	0 00	0 00	0 00	0.00	0 00	324 75	0 15	324.90	0 00
Environmental Protection Agency	0 00	0 00	0 00	0 00	0 00	324 75	0 15	324 90	0 00
EPA Fund-Lead Superfund Sites	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
National Aeronautics and Space Administration	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Tennessee Valley Authority	0 00	0 00	0 00	0 00	0 00	0 00	6,855 43	6,855 43	0 00
US Department of Agriculture	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
US Enrichment Corporation	0 00	0 00	0 00	0 00	0 00	0 00	11 20	11 20	0 00
Veterans Administration	0 00	0 00	0 00	0 00	0 00	0 00	3,653 00	3,653 00	0 00
Total for Federal Facilities	270 00	531 54	0 00	0 00	9,841 26	534 71	14,395 47	25,572 98	1,026 47

Note. Data are from Section 8 of Form R

Table 6-5: TRI Transfers Off-site for Further Waste Management/Disposal by Agency, 2000: Federal Facilities

Federal Agency	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs: Metals and Metal Compounds Pounds	Transfers to POTWs: Non-metal TRI Chemicals Pounds	Other Off-site Transfers* Pounds	Other Transfers Off-site to Disposal** Pounds	Total Transfers for Further Waste Management/ Disposal Pounds
Department of Defense	4,748,755	93,963	298,252	2,240	157,091	0	625,217	5,925,518
Air Force	99,000	14,353	147,377	619	102,315	0	109,377	473,041
Army	4,420,271	36,729	54,937	860	10,668	0	214,227	4,737,692
Army Corps of Engineers	1,443	0	0	0	0	0	0	1,443
Defense Logistics	0	0	0	0	0	0	0	0
Defense Stockpile	0	0	0	0	0	0	0	0
Marines	71,242	20,840	4,694	0	170	0	632	97,578
Military Academy	0	9,890	0	0	0	0	0	9,890
Navy	156,798	12,151	91,244	761	43,938	0	300,981	605,874
Department of Energy	1,503,072	1,542	4,520	317	7,008	0	21,872	1,538,331
Department of Interior	0	0	0	0	0	0	0	0
Department of Transportation	127	0	0	0	0	0	54	181
Department of State	5,000	0	0	0	0	0	0	5,000
Department of Treasury	40,584,044	0	0	1,072	0	0	21,202	40,606,318
Environmental Protection Agency	32	0	293	0	0	0	0	325
Environmental Protection Agency	32	0	293	0	0	0	0	325
US EPA Fund-Lead Superfund Sites	0	0	0	0	0	0	0	0
National Aeronautics and Space Administration	60,520	13,108	12,684	0	0	0	723	87,035
Tennessee Valley Authority	82,309	0	0	0	0	0	779,833	862,142
US Department of Agriculture	0	0	0	0	0	0	0	0
US Enrichment Corporation	0	0	0	0	0	0	0	0
Veterans Administration	0	0	0	0	0	0	0	0
Total for Federal Facilities	**46,983,858**	**108,613**	**315,749**	**3,630**	**164,099**	**0**	**1,448,901**	**49,024,850**

Note: Total Transfers Off-site for Further Waste Management/Disposal are from Section 6 of Form R

* Other Off-site Transfers are transfers reported without a valid waste management code
** Does not include transfers to POTWs of metals and metal compounds

Table 6-6: TRI Transfers Off-site for Further Waste Management/Disposal of PBT Chemicals by Agency, 2000: Federal Facilities

Federal Agency	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs: Metals and Metal Compounds Pounds	Transfers to POTWs: Non-metal TRI Chemicals Pounds	Other Off-site Transfers* Pounds	Other Transfers Off-site to Disposal** Pounds	Total Transfers for Further Waste Management/ Disposal Pounds
Department of Defense	130 69	0 00	0 00	4 47	0 00	0 00	22 10	157 26
Air Force	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Army	0 22	0 00	0 00	0 00	0 00	0 00	22 10	22 32
Army Corps of Engineers	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Defense Logistics	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Defense Stockpile	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Marines	0.00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Military Academy	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Navy	130 47	0 00	0 00	4 47	0 00	0 00	0 00	134 94
Department of Energy	382 59	0 00	8 00	1 30	0 00	0 00	3,735 02	4,126 91
Department of Interior	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Department of State	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Department of Transportation	126 87	0 00	0 00	0 00	0 10	0 00	54 23	181 20
Department of Treasury	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Environmental Protection Agency	31 95	0 00	292 80	0 00	0 00	0 00	0 00	324 75
Environmental Protection Agency	31 95	0 00	292 80	0 00	0 00	0 00	0 00	324 75
EPA Fund-Lead Superfund Sites	0 00	0 00	0 00	0.00	0 00	0 00	0 00	0 00
National Aeronautics and Space Administration	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Tennessee Valley Authority	9 00	0 00	0 00	0 00	0 00	0 00	102 90	111 90
US Department of Agriculture	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
US Enrichment Corporation	0 00	0 00	0 00	0 00	0 00	0.00	0 00	0 00
Veterans Administration	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
Total for Federal Facilities	681 10	0 00	300.80	5 77	0 10	0 00	3,914 25	4,902 02

Note: Total Transfers Off-site for Further Waste Management/Disposal are from Section 6 of Form R

* Other Off-site Transfers are transfers reported without a valid waste management code
** Does not include transfers to POTWs of metals and metal compounds

Tennessee Valley Authority facilities reported over 862,100 pounds sent off-site for further waste management and disposal. Most of these transfers were other transfers sent off-site for disposal, 779,800 pounds or 90.5 percent of the total transfers reported by TVA facilities in 2000.

Transfers Off-site for Further Waste Management/Disposal of PBT Chemicals

Federal facilities reported over 4,900 pounds of PBT chemicals transferred off-site for further waste management and disposal in 2000, as shown in Table 6-6. Most of these transfers were other transfers sent off-site for disposal, over 3,900 pounds or 79.8 percent of the total.

Department of Energy facilities reported over 4,100 pounds of PBT chemicals in transfers sent off-site for further waste management and disposal. This represented 84.2 percent of the total of such transfers of all federal facilities in 2000. Most of these transfers by DOE facilities were other transfers sent off-site for disposal, over 3,700 pounds or 90.5 percent of the total reported by DOE facilities.

There were 681 pounds of PBT chemicals transferred to recycling by federal facilities in 2000, with over half reported by Department of Energy facilities. Of the 301 pounds of PBT chemicals transferred to treatment, EPA Fund-lead Superfund Site reported 293 pounds.

Projected Quantities of TRI Chemicals Managed in Waste, 2000-2002

As Table 6-7 shows, production-related waste for federal facilities is projected to decrease by 7.0 percent between 2000 and 2002, with the largest decline, 6.8 percent, taking place in 2000. As described in **Waste Management** in Chapter 1, on each Form R that it submits, a facility reports actual waste management quantities for the current and prior years and projected quantities for the next two years.

Table 6-7: Current Year and Projected Quantities of TRI Chemicals in Waste by Agency, 2000-2002: Federal Facilities

	Total Production-related Waste Management				
		Projected			
Federal Agency	Current Year 2000 Pounds	2001 Pounds	2002 Pounds	Change 2000-2001 Percent	Change 2000-2002 Percent
Department of Defense	43,702,002	40,719,619	38,626,075	-6.8	-11.6
Air Force	2,934,052	2,651,182	2,648,735	-9 6	-9 7
Army	37,645,776	34,456,194	34,442,884	-8.5	-8.5
Army Corps of Engineers	14,498	19,902	19,902	37 3	37 3
Defense Logistics	911,931	1,367,895	1,367,895	50.0	50 0
Defense Stockpile	0	0	0	--	--
Marines	130,299	131,359	126,659	0.8	-2 8
Military Academy	12,059	20,000	20,000	65 9	65 9
Navy	2,053,386	2,073,087	1,858,106	1.0	-9.5
Department of Energy	4,758,592	2,055,027	2,019,763	-56 8	-57 6
Department of Interior	24,569	5,130	0	-79.1	-100.0
Department of Transportation	196	15	15	-92 3	-92 3
Department of State	61,729	61,729	61,729	0 0	0 0
Department of Treasury	40,717,265	32,298,171	32,296,664	-20 7	-20 7
Environmental Protection Agency	1,001,585	1,001,452	1,001,260	0 0	0.0
Environmental Protection Agency	325	192	0	-40 9	-99 9
US EPA Fund-Lead Superfund Sites	1,001,260	1,001,260	1,001,260	0.0	0.0
National Aeronautics and Space Administration	291,290	283,370	277,718	-2 7	-4 7
Tennessee Valley Authority	119,578,019	119,534,219	119,534,219	-0.04	-0.04
US Department of Agriculture	495,858	478,500	461,700	-3 5	-6 9
US Enrichment Corporation	555,355	333,990	283,990	-39 9	-48 9
Veterans Administration	3,653	3,653	3,653	0 0	0 0
Total for Federal Facilities	**211,190,113**	**196,774,876**	**196,424,893**	**-6.8**	**-7.0**

Note: Data are from Section 8 (Total of 8 1 through 8 7) of Form R for 2000 Current Year is Column B, 2001 is Column C and 2002 is Column D

Facilities of the Tennessee Valley Authority, the agency with the largest total production-related waste in 2000, projected almost no reductions.

Department of Defense facilities, which reported the second largest total production-related waste of all federal agencies, projected a decrease of 11.6 percent from 2000 to 2002. This included projected reductions in the neighborhood of 9 percent by Air Force, Army and Navy facilities. Facilities of the U.S. Marines also projected a reduction of 2.8 percent. The other DOD agencies, however, projected increases, including a 65.9 percent increase by the Military Academy, a 50.0 percent increase by Defense Logistics and a 37.3 percent increase by the Army Corps of Engineers.

Other agencies projected large decreases, including Department of Energy facilities expecting a decrease of 57.6 percent from 2000 to 2002, Treasury Department facilities expecting a 20.7 percent decrease, and the U.S. Enrichment Corporation facilities projecting a 48.9 percent decrease.

Source Reduction, 2000

In 2000, federal facilities filed 119 forms reporting source reduction activity (see Table 6-8). As noted in **Waste Management** in Chapter 1, source reduction—activity that prevents the generation of waste—is the preferred waste management option.

Department of Defense facilities reported source reduction activity on 70 forms, 26.7 percent of their total Form Rs. Of the DOD agencies, the Army Corps of Engineers facilities reported source reduction activities on all their Form Rs, Marines facilities on 44.4 percent, Navy facilities on 38.0 percent, Air Force facilities on 31.5 percent, and Army facilities on 17.2 percent.

Tennessee Valley Authority facilities reported source reduction activity on 23 Form Rs, 10.4 percent. Department of Treasury facilities reported such activity on 33.3 percent of their 15 Form Rs, and Department of Energy facilities on 9.0 percent of their 78 Form Rs.

The most frequently reported source reduction activity (identified on 44 forms, including 32 filed by the Department of Defense facilities) was good operating practices. Raw materials modifications came next, with 39 forms (including 20 by Tennessee Valley Authority facilities and 13 by Department of Defense facilities). Inventory control

Table 6-8: Number of Forms Reporting Source Reduction Activity by Agency, 2000: Federal Facilities

		Forms Reporting Source Reduction		Category of Source Reduction Activity							
Federal Agency	Total Form Rs		Percent of All Form Rs	Good Operating Practices	Inventory Control	Spill and Leak Prevention	Raw Materials Modifications	Process Modifications	Cleaning and Degreasing	Surface Preparation and Finishing	Product Modifications
	Number	Number	Percent	Number	Number	Number	Number	Number	Number	Number	Number
Department of Defense	262	70	26 7	32	19	13	13	15	16	19	1
Air Force	54	17	31 5	5	0	4	7	6	14	11	0
Army	128	22	17 2	14	6	8	1	7	0	0	0
Army Corps of Engineers	8	8	100 0	8	0	0	0	0	0	0	0
Defense Logistics	5	0	0 0	0	0	0	0	0	0	0	0
Defense Stockpile	7	0	0 0	0	0	0	0	0	0	0	0
Marines	9	4	44 4	1	1	0	1	0	0	4	1
Military Academy	1	0	0 0	0	0	0	0	0	0	0	0
Navy	50	19	38 0	4	12	1	4	2	2	4	0
Department of Energy	78	7	9 0	1	2	2	3	3	0	0	0
Department of Interior	4	2	50 0	1	0	2	0	0	1	0	0
Department of Transportation	2	2	100 0	0	0	2	0	2	0	0	0
Department of State	1	0	0 0	0	0	0	0	0	0	0	0
Department of Treasury	15	5	33 3	1	0	0	3	1	0	0	0
Environmental Protection Agency	9	2	22 2	2	0	0	0	0	0	0	0
Environmental Protection Agency	5	0	0 0	0	0	0	0	0	0	0	0
US EPA Fund-Lead Superfund Sites	4	2	50 0	2	0	0	0	0	0	0	0
National Aeronautics and Space Administration	11	5	45 5	4	0	0	0	2	4	0	0
Tennessee Valley Authority	222	23	10 4	2	0	0	20	1	0	0	0
US Department of Agriculture	5	3	60 0	1	2	2	0	0	0	0	0
US Enrichment Corporation	6	0	0 0	0	0	0	0	0	0	0	0
Veterans Administration	1	0	0 0	0	0	0	0	0	0	0	0
Total for Federal Facilities	**616**	**119**	**19.3**	**44**	**23**	**21**	**39**	**24**	**21**	**19**	**1**

Note· All source reduction activities on a form are counted in the corresponding category Totals do not equal the sum of the categories because forms may report more than one source reduction activity

Table 6-9: Total On-site and Off-site Releases by Agency, 1998-2000: Federal Facilities

Federal Agency	Total On-site and Off-site Releases						
	1998	1999	2000	Change 1999-2000		Change 1998-2000	
	Pounds	Pounds	Pounds	Pounds	Percent	Pounds	Percent
Department of Defense	3,495,320	6,964,516	7,889,376	924,860	13.3	4,394,056	125.7
Air Force	1,224,632	1,150,693	1,426,288	275,595	24 0	201,656	16 5
Army	1,517,489	5,284,734	5,486,122	201,388	3.8	3,968,633	261 5
Army Corps of Engineers	11,506	16,744	13,055	-3,689	-22 0	1,549	13 5
Defense Logistics	5,545	5,670	4,156	-1,514	-26.7	-1,389	-25.0
Defense Stockpile	0	0	0	0	--	0	--
Marines	88,582	71,706	23,078	-48,628	-67 8	-65,504	-73.9
Military Academy	0	0	2,169	2,169	--	2,169	--
Navy	647,566	434,969	934,508	499,539	114.8	286,942	44.3
Department of Energy	592,455	933,336	755,605	-177,731	-19 0	163,150	27 5
Department of Interior	5,221	5,083	16,446	11,363	223.5	11,225	215.0
Department of Transportation	0	0	0	0	--	0	--
Department of State	0	0	250	250	--	250	--
Department of Treasury	126,242	153,190	134,049	-19,141	-12 5	7,807	6 2
Environmental Protection Agency	0	0	1,099,177	1,099,177	--	1,099,177	--
Environmental Protection Agency	0	0	0	0	--	0	--
US EPA Fund-Lead Superfund Sites	0	0	1,099,177	1,099,177	--	1,099,177	--
National Aeronautics and Space Administration	315,367	178,429	100,028	-78,401	-43 9	-215,339	-68 3
Tennessee Valley Authority	59,091,265	68,943,646	68,153,235	-790,411	-1.1	9,061,970	15.3
US Department of Agriculture	580,790	541,563	496,271	-45,292	-8 4	-84,519	-14 6
US Enrichment Corporation	469,092	517,353	507,222	-10,131	-2 0	38,130	8.1
Veterans Administration	0	0	0	0	--	0	--
Total for Federal Facilities	**64,675,752**	**78,237,116**	**79,151,659**	**914,543**	**1.2**	**14,475,907**	**22.4**

Note: Does not include PBT chemicals, vanadium and vanadium compounds **On-site Releases** are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

followed with 23 forms, and then came cleaning and degreasing and spill and leak prevention both with 21 forms. Most forms for these types of source reduction activities were from Department of Defense facilities.

1998-2000 DATA FOR FEDERAL FACILITIES

Comparisons of TRI data across reporting years are made on the basis of chemicals that were reportable in all years with the same reporting definitions. This ensures that apparent increases or decreases from one year to another are not the result of changes in the list of TRI chemicals. **Making Year-to-Year Comparisons of TRI Data**, in Chapter 1, explains these multiyear analyses; an understanding of these issues is essential for accurate interpretation of the multiyear data presented in this chapter. Comparisons of the years 1998, 1999 and 2000 require that the PBT chemicals (see Chapter 3 for a discussion of these chemicals) and vanadium and vanadium compounds be omitted from the data.

On-site and Off-site Releases, 1998-2000

Table 6-9 summarizes changes in on- and off-site releases reported by federal facilities between 1998 and 2000. Total releases rose 22.4 percent, an increase of 14.5 million pounds.

Tennessee Valley Authority facilities reported the largest increase in on- and off-site releases of any federal agency, with an increase of 9.1 million pounds from 1998 to 2000. They did report a decrease, of 790,400 pounds or 1.1 percent, from 1999 to 2000.

Army facilities in the Department of Defense reported the second largest increase with 4.0 million pounds, a 261.5 percent increase. This increase occurred primarily from 1998 to 1999. The Army facilities reported a 3.8 percent increase from 1999 to 2000.

The Environmental Protection Agency reported the third largest increase with 1.1 million pounds, up from zero releases in 1998 and 1999. These releases

are related to clean-up activities at hazardous waste sites and may vary from year to year.

The only agencies reporting a decrease from 1998 to 2000 were the National Aeronautics and Space Administration with a decrease of 215,300 pounds or 68.3 percent, the Department of Agriculture with a decrease of 84,500 pounds or 14.6 percent and the Marines with a decrease of 65,500 pounds or 73.9 percent.

Quantities of TRI Chemicals in Waste, 1998-2000

Table 6-10 shows changes between 1998 and 2000 in total production-related waste managed as reported by federal facilities. Total production-related waste managed by federal facilities rose 34.0 percent, from 156.0 million pounds to 209.0 million pounds.

Treasury Department facilities reported the largest increase, 25.7 million pounds (170.8 percent) from 1998 to 2000. These facilities reported an increase of 11.2 million pounds from 1999 to 2000.

Department of Defense's Army facilities reported the second largest increase in total production-related waste of all federal agencies, with an increase of 17.4 million pounds (86.0 percent) from 1998 to 2000, with 11.5 million pounds of the increase occurring from 1999 to 2000.

Tennessee Valley Authority facilities reported an increase of 7.9 million pounds (7.2 percent) from 1998 to 2000. However, they reported a decrease from 1999 to 2000 of 1.2 million pounds.

Decreases from 1998 to 2000 in production-related waste were reported by the National Aeronautics and Space Administration, with a decrease of 523,300 pounds or 64.2 percent, the DOD Defense Logistics agency with a decrease of 393,900 pounds or 30.2 percent, the Marines with a decrease of 177,800 pounds or 57.7 percent, the U.S. Department of Agriculture with a decrease of 84,700 pounds or 14.6 percent, and the Army Corps of Engineers with a decrease of 3,000 pounds or 17.2 percent.

Table 6-10: Total Production-related Waste Managed by Agency, 1998-2000: Federal Facilities

Federal Agency	Total Production-related Waste Managed						
	1998	1999	2000	Change 1999-2000		Change 1998-2000	
	Pounds	Pounds	Pounds	Pounds	Percent	Pounds	Percent
Department of Defense	24,981,591	31,015,356	43,701,619	12,686,263	40.9	18,720,028	74.9
Air Force	1,752,887	2,161,468	2,934,013	772,545	35.7	1,181,126	67.4
Army	20,237,160	26,149,384	37,645,577	11,496,193	44.0	17,408,417	86.0
Army Corps of Engineers	17,510	18,246	14,498	-3,748	-20 5	-3,012	-17 2
Defense Logistics	1,305,830	1,330,618	911,931	-418,687	-31.5	-393,899	-30.2
Defense Stockpile	0	0	0	0	--	0	--
Marines	308,076	257,536	130,299	-127,237	-49.4	-177,777	-57.7
Military Academy	0	0	12,059	12,059	--	12,059	--
Navy	1,360,128	1,098,104	2,053,242	955,138	87.0	693,114	51.0
Department of Energy	4,504,014	3,893,516	4,744,442	850,926	21.9	240,428	5 3
Department of Interior	5,130	5,122	24,569	19,447	379.7	19,439	378.9
Department of Transportation	0	0	0	0	--	0	--
Department of State	0	0	61,729	61,729	--	61,729	--
Department of Treasury	15,034,251	29,526,864	40,717,265	11,190,401	37 9	25,683,014	170 8
Environmental Protection Agency	0	0	1,001,260	1,001,260	--	1,001,260	--
Environmental Protection Agency	0	0	0	0	--	0	--
US EPA Fund-Lead Superfund Sites	0	0	1,001,260	1,001,260	--	1,001,260	--
National Aeronautics and Space Administration	814,600	520,618	291,290	-229,328	-44 0	-523,310	-64 2
Tennessee Valley Authority	109,527,323	118,614,386	117,406,164	-1,208,222	-1.0	7,878,841	7.2
US Department of Agriculture	580,550	541,349	495,858	-45,491	-8.4	-84,692	-14 6
US Enrichment Corporation	517,796	581,643	555,344	-26,299	-4.5	37,548	7.3
Veterans Administration	0	0	0	0	--	0	--
Total for Federal Facilities	**155,965,255**	**184,698,854**	**208,999,540**	**24,300,686**	**13.2**	**53,034,285**	**34.0**

Note: Does not include PBT chemicals, vanadium and vanadium compounds Data are from Section 8 (total of 8 1 through 8 7) of Form R of year indicated

Appendix A

Chemical-specific TRI Release and Other Waste Management Data, 1988, 1995 and 1998-2000

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries)

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
71751-41-2	*	Abamectin	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	1	250	0	0	251	0	251
			98o	3	1	250	0	0	251	0	251
			98n	No reports							
			99o	3	1	250	0	0	251	0	251
			99n	No reports							
			00o	3	20	15	0	0	35	0	35
			00n	No reports							
30560-19-1	*	Acephate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	5	2,250	0	0	0	2,250	1,000	3,250
			98o	7	1,775	0	0	0	1,775	0	1,775
			98n	No reports							
			99o	7	645	0	0	0	645	0	645
			99n	No reports							
			00o	5	958	0	0	0	958	7,200	8,158
			00n	1	1	0	0	0	1	0	1
75-07-0	*,**	Acetaldehyde	88	67	6,951,807	98,236	2,219,105	194,958	9,464,106	24,930	9,489,036
			95	238	13,435,389	227,200	605,886	155,320	14,423,795	1,099	14,424,894
			98o	272	12,515,193	192,756	412,152	21,562	13,141,663	5,909	13,147,572
			98n	5	2,233	0	0	0	2,233	7	2,240
			99o	279	12,055,366	228,545	754,277	20,589	13,058,777	4,223	13,063,000
			99n	5	697	1	0	0	698	179	877
			00o	290	12,374,227	195,009	1,079,397	22,584	13,671,217	1,263	13,672,480
			00n	7	2,222	5	0	0	2,227	2,519	4,746
60-35-5	**	Acetamide	88	1	0	0	0	0	0	250	250
			95	5	8	0	920,000	0	920,008	0	920,008
			98o	9	106	1	2,157,694	0	2,157,801	0	2,157,801
			98n	3	63	0	0	25,474	25,537	10	25,547
			99o	10	107	1	2,452,733	0	2,452,841	0	2,452,841
			99n	2	51	0	0	0	51	2	53
			00o	10	153	2	2,977,410	0	2,977,565	0	2,977,565
			00n	1	6	0	0	0	6	0	6
75-05-8		Acetonitrile	88	67	2,194,739	42,223	16,739,010	1,790	18,977,762	416,333	19,394,095
			95	89	1,038,942	7,324	30,336,181	12	31,382,459	10,971	31,393,430
			98o	110	1,029,234	28,862	20,733,190	33	21,791,319	35,073	21,826,392
			98n	22	4,406	0	1,240,903	0	1,245,309	29,981	1,275,290
			99o	111	877,756	14,031	19,487,584	223	20,379,594	658,159	21,037,753
			99n	23	4,907	1	49,874	0	54,782	53,814	108,596
			00o	110	731,285	16,533	22,318,983	592	23,067,393	14,924	23,082,317
			00n	19	2,016	0	217,251	0	219,267	49,287	268,554
98-86-2	*	Acetophenone	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	39	205,888	971	629,201	3,369	839,429	19,427	858,856
			98o	46	138,515	655	732,358	0	871,528	49,744	921,272
			98n	6	33,106	0	1,649	0	34,755	0	34,755
			99o	43	178,003	699	627,563	0	806,265	35,156	841,421
			99n	5	5	1	62,265	0	62,271	4	62,275
			00o	48	153,334	441	580,000	266	734,041	33,567	767,608
			00n	6	2	0	138,192	0	138,194	0	138,194

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries)

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Abamectin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	6,425	10,152	29	16,606	0
	98o	0	0	0	0	6,230	4,165	28	10,423	0
	98n	No reports								
	99o	0	0	0	0	4,918	3,589	23	8,530	0
	99n	No reports								
	00o	0	0	0	0	3,341	1,848	90	5,279	0
	00n	No reports								
* Acephate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	10	0	0	0	183,000	15,728	1,409	200,147	0
	98o	90	0	0	0	9,800	12,683	2,186	24,759	0
	98n	No reports								
	99o	70	0	0	0	7,500	17,922	426	25,918	0
	99n	No reports								
	00o	130	0	0	0	14,300	17,797	514	32,741	0
	00n	0	0	0	0	14,163	60	1	14,224	0
*,** Acetaldehyde	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	10,000	32,190	9,239,285	358,459	14,510,964	1,755,026	14,441,699	40,347,623	1,681
	98o	14,000	694	10,275,584	266,784	17,025,381	1,672,903	13,217,235	42,472,581	1,163
	98n	0	0	0	12,964,868	166,000	45	2,281	13,133,194	0
	99o	17,183	1,460	14,644,837	245,738	23,143,970	1,431,358	13,072,383	52,556,929	125
	99n	0	0	130	0	256,700	0	875	257,705	0
	00o	15,148	70,161	27,063,609	341,937	26,081,588	1,916,385	13,683,014	69,171,842	569
	00n	0	0	130	0	449,719	916	4,596	455,361	0
** Acetamide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	1,000	0	0	130	920,000	921,130	0
	98o	0	0	81,220	40,954	2	362	2,157,761	2,280,299	0
	98n	0	0	0	21,133	90,561	0	25,547	137,241	0
	99o	0	0	80,637	44,923	2	575	2,452,836	2,578,973	0
	99n	0	0	0	0	166,642	0	53	166,695	0
	00o	0	0	83,297	42,385	1	2,766	2,978,054	3,106,503	0
	00n	0	0	0	0	21,717	0	6	21,723	0
Acetonitrile	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	3,309,962	2,071,150	23,162,787	4,704,330	11,104,608	5,742,679	31,934,516	82,030,032	1,073
	98o	12,941,704	1,880,831	20,414,930	7,032,353	19,270,706	7,630,788	22,923,308	92,094,620	1,027
	98n	198,874	0	5,904	4,526,522	1,973,227	371,049	1,275,760	8,351,336	0
	99o	12,141,069	2,000,134	41,499,091	7,788,191	20,402,846	8,480,280	21,189,784	113,501,395	64
	99n	515,017	0	34,700	5,257,192	2,844,093	93,449	59,490	8,803,941	10
	00o	11,489,723	1,952,069	30,128,360	8,379,115	20,172,150	6,972,959	23,128,668	102,223,044	390
	00n	68,705	0	37,089	3,862,156	3,050,829	38,133	268,009	7,324,921	0
* Acetophenone	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	920,000	9,710	24,949,642	1,171,212	1,313,510	185,062	886,541	29,435,677	517
	98o	0	3,448	32,071,882	1,355,425	719,096	161,672	929,213	35,240,736	0
	98n	0	0	0	59,772	137,644	0	34,752	232,168	0
	99o	0	3,683	33,367,740	1,435,519	866,050	178,690	858,798	36,710,480	5
	99n	0	0	0	0	95,167	0	62,048	157,215	0
	00o	0	14,741	30,180,564	10,888,162	944,571	128,185	805,533	42,961,756	0
	00n	0	0	0	20,103	78,627	809	138,304	237,843	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA: not applicable (waste management data not required for 1988 reporting year)
NR: not reportable (chemicals added to the TRI list after 1988)
DC: definition change (chemicals whose reporting definition has changed since 1988)
No reports: No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
53-96-3	**	2-Acetylamino-fluorene	88	No reports							
			95	No reports							
			98o	No reports							
			98n	1	110	0	0	8,500	8,610	1,205	9,815
			99o	No reports							
			99n	4	139	1	0	38,197	38,337	20,648	58,985
			00o	No reports							
			00n	4	270	0	5	12,690	12,965	462	13,427
62476-59-9	*	Acifluorfen, sodium salt	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	4	60	5	0	5	70	0	70
			98o	4	476	2,193	0	17	2,686	421,514	424,200
			98n	No reports							
			99o	4	315	4,757	0	0	5,072	222,680	227,752
			99n	No reports							
			00o	4	332	5,811	0	0	6,143	225,664	231,807
			00n	No reports							
107-02-8	*	Acrolein	88	12	33,652	0	68,950	500	103,102	0	103,102
			95	21	71,302	4	83,465	0	154,771	0	154,771
			98o	29	184,134	270	95,900	1,351	281,655	665	282,320
			98n	No reports							
			99o	29	204,777	255	170,950	429	376,411	139	376,550
			99n	No reports							
			00o	30	208,108	643	201,020	404	410,175	410	410,585
			00n	No reports							
79-06-1	*,**	Acrylamide	88	59	26,019	3,124	2,198,000	756	2,227,899	97,582	2,325,481
			95	82	19,083	1,801	6,279,626	235	6,300,745	3,083	6,303,828
			98o	77	23,343	2,272	6,333,564	0	6,359,179	6,789	6,365,968
			98n	7	129	0	0	0	129	172	301
			99o	80	22,458	369	7,510,853	22	7,533,702	2,224	7,535,926
			99n	10	2,416	1	0	6,267	8,684	3,920	12,604
			00o	80	14,780	160	8,639,361	4	8,654,305	10,723	8,665,028
			00n	6	1	0	0	0	1	0	1
79-10-7		Acrylic acid	88	158	800,046	16,646	22,262,010	15,950	23,094,652	134,139	23,228,791
			95	189	528,058	2,648	7,840,000	47	8,370,753	45,395	8,416,148
			98o	195	322,224	6,973	4,499,600	79	4,828,876	80,461	4,909,337
			98n	14	368	0	44	48,617	49,029	5,989	55,018
			99o	199	366,380	6,734	2,630,949	1,030	3,005,093	219,423	3,224,516
			99n	11	158	1	0	0	159	688	847
			00o	200	367,226	6,074	836,946	1,231	1,211,477	121,382	1,332,859
			00n	13	115	0	26,747	0	26,862	320	27,182
107-13-1	*,**	Acrylonitrile	88	113	4,796,161	6,531	4,562,713	2,150	9,367,555	151,450	9,519,005
			95	105	1,537,068	7,137	5,193,028	618	6,737,851	4,917	6,742,768
			98o	105	1,147,444	1,100	4,005,290	321	5,154,155	8,156	5,162,311
			98n	11	1,264	0	0	0	1,264	916	2,180
			99o	104	984,266	1,172	4,462,492	560	5,448,490	84,849	5,533,339
			99n	13	1,015	1	0	23,244	24,260	13,569	37,829
			00o	104	950,435	741	3,952,598	99,097	5,002,871	322,348	5,325,219
			00n	12	714	255	5,192	16,301	22,462	1,370	23,832

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR: not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
** 2-Acetylamino-fluorene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	0	0	0	0	310	41	9,800	10,151	0
	99o	No reports								
	99n	0	0	0	0	99,902	0	58,981	158,883	0
	00o	No reports								
	00n	0	0	0	0	55,443	781	13,425	69,649	0
* Acifluorfen, sodium salt	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	600	1,272	65	1,937	0
	98o	0	0	0	0	13,105	3,237	423,965	440,307	0
	98n	No reports								
	99o	0	0	0	0	45,498	1,891	227,507	274,896	0
	99n	No reports								
	00o	0	0	0	0	5,929	2,304	231,538	239,771	5
	00n	No reports								
* Acrolein	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	4,800	0	3,752,847	43,323	5,168,260	11,361	154,579	9,135,170	85
	98o	0	0	3,712,551	38,933	16,430,612	12	278,469	20,460,577	194
	98n	No reports								
	99o	0	0	4,878,507	176,954	8,581,456	211	365,014	14,002,142	16
	99n	No reports								
	00o	0	0	11,790,188	67,678	3,422,820	140,068	394,272	15,815,026	306
	00n	No reports								
*,** Acrylamide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	4,037	0	820	43,304	187,170	210,284	6,305,564	6,751,179	3,980
	98o	162	0	90,200	6,627	160,009	311,267	6,363,848	6,932,113	49,723
	98n	0	0	0	228,142	62,489	0	291	290,922	0
	99o	3	0	94,233	9,777	134,468	234,039	7,536,297	8,008,817	0
	99n	0	0	0	51,885	148,301	45,117	10,310	255,613	0
	00o	27	0	82,000	18,230	190,646	180,382	8,656,116	9,127,401	7,000
	00n	0	0	504	782	109,415	598	1	111,300	0
Acrylic acid	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	3,339,863	34,800	26,544,419	5,033,613	26,801,813	471,136	8,407,802	70,633,446	3,401
	98o	4,863,156	0	31,350,455	5,916,104	24,168,363	2,077,125	4,895,656	73,270,859	6,993
	98n	0	101,540	1,605	659,051	452,945	9,417	63,584	1,288,142	0
	99o	4,680,911	120	20,851,955	6,323,120	32,320,082	1,201,617	3,235,863	68,613,668	111,051
	99n	0	52,100	1,323	37,623	1,082,263	89	697	1,174,095	0
	00o	4,228,023	720	28,230,407	5,551,534	27,945,859	2,240,797	1,373,081	69,570,421	1,123
	00n	0	0	998	85,821	830,093	60	28,460	945,432	0
*,** Acrylonitrile	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	12,408,043	69,716	3,326,652	666,245	10,647,695	1,131,550	6,775,847	35,025,748	8,105
	98o	12,827,695	190	4,841,082	158,067	10,880,197	872,541	5,130,164	34,709,936	2,373
	98n	0	0	0	24,762	433,873	1,519,681	2,043	1,980,359	0
	99o	12,435,645	0	3,909,625	211,021	11,415,674	1,743,040	8,483,834	38,198,839	81,963
	99n	0	0	0	52,049	766,904	16,283	36,383	871,619	0
	00o	9,094,814	0	6,323,083	275,532	13,620,712	733,083	4,874,125	34,921,349	109,038
	00n	0	0	88,884	47,468	623,437	64,837	23,366	847,992	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC. definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
15972-60-8	*	Alachlor	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	756	280	0	0	1,036	2,940	3,976
			98o	2	1,510	220	0	0	1,730	9,100	10,830
			98n	3	54	0	0	0	54	613	667
			99o	2	755	390	0	0	1,145	1,270	2,415
			99n	3	42	0	0	0	42	655	697
			00o	3	1,362	7	0	0	1,369	5,000	6,369
			00n	3	11	0	0	0	11	167	178
116-06-3	*	Aldicarb	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	3,477	0	0	6	3,483	0	3,483
			98o	3	154	0	0	15	169	0	169
			98n	2	1	0	0	0	1	0	1
			99o	3	171	0	0	256	427	0	427
			99n	3	6	0	0	0	6	156	162
			00o	3	185	0	0	5	190	0	190
			00n	3	0	0	0	0	0	0	0
309-00-2	*	Aldrin	88	No reports							
			95	No reports							
			98o	No reports							
			98n	3	307	7	0	22,000	22,314	3,308	25,622
			99o	No reports							
			99n	1	0	0	0	0	0	0	0
		Not comparable	00o	No reports							
		to prior years***	00n	11	0.79	0.00	0.00	2,342.00	2,342.79	2.58	2,345.37
28057-48-9		d-trans-Allethrin	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							
107-18-6	*	Allyl alcohol	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	31	168,141	6,519	298,801	1,100	474,561	11,296	485,857
			98o	32	262,353	9,688	424,120	0	696,161	16	696,177
			98n	4	111	0	39,734	0	39,845	0	39,845
			99o	29	263,169	5,041	595,114	755	864,079	28	864,107
			99n	5	520	0	4,832	0	5,352	16,195	21,547
			00o	29	379,112	6,067	519,712	5	904,896	2	904,898
			00n	6	34	0	6,906	0	6,940	5	6,945
107-11-9		Allylamine	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	2	951	40	0	0	991	0	991
			98n	1	0	0	0	0	0	0	0
			99o	2	1,040	450	0	0	1,490	0	1,490
			99n	1	0	0	0	0	0	0	0
			00o	2	1,060	2,500	0	0	3,560	0	3,560
			00n	1	0	0	0	0	0	0	0

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*	Alachlor	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	5,481	120,000	217,179	3,930	346,590	30,000
		98o	0	0	0	0	17,300	181,800	10,830	209,930	0
		98n	0	0	0	0	64,944	0	183	65,127	0
		99o	0	0	0	0	11,000	139,100	2,401	152,501	0
		99n	0	0	0	0	261,537	0	197	261,734	0
		00o	0	0	0	0	9,200	96,135	6,292	111,627	0
		00n	0	0	0	0	116,446	0	179	116,625	0
*	Aldicarb	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	580	20,011	3,472	24,063	0
		98o	0	0	0	0	502	40,611	149	41,262	10
		98n	0	0	0	0	16,633	0	1	16,634	0
		99o	0	0	0	0	376	19,953	166	20,495	0
		99n	0	0	0	0	170,879	0	162	171,041	0
		00o	0	0	0	0	471	28,513	180	29,164	0
		00n	0	0	0	0	152,433	11	0	152,444	0
*	Aldrin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	0	0	0	1	77,986	110	26,045	104,142	0
		99o	No reports								
		99n	0	0	0	0	53,598	0	0	53,598	0
	Not comparable	00o	No reports								
	to prior years***	00n	0.00	0.00	0.00	0.00	82,504.75	283.00	2,345.32	85,133.07	0.00
	d-trans-Allethrin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	0	0	0
		98o	0	0	0	0	0	0	0	0	0
		98n	No reports								
		99o	0	0	0	0	0	0	0	0	0
		99n	No reports								
		00o	0	0	0	0	0	0	0	0	0
		00n	No reports								
*	Allyl alcohol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	189,517	0	1,531,138	363,377	1,414,321	422,499	486,288	4,407,140	131
		98o	248,764	0	1,413,165	1,168,713	1,157,533	173,575	653,664	4,815,414	0
		98n	0	0	0	61,206	76,299	0	39,841	177,346	0
		99o	340,364	0	1,844,591	1,028,462	924,753	133,150	814,620	5,085,940	750
		99n	0	0	0	46,358	3,239,971	61,976	21,540	3,369,845	0
		00o	2,798,933	0	2,012,131	485,498	1,639,985	1,381,911	897,963	9,216,421	0
		00n	0	0	0	22,564	305,236	195	6,934	334,929	0
	Allylamine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	0	0	0	0	360	0	991	1,351	0
		98n	0	0	0	5	20	0	0	25	0
		99o	0	0	0	0	4,000	0	1,274	5,274	0
		99n	0	0	0	1	0	0	0	1	0
		00o	0	0	0	0	22,000	0	3,304	25,304	0
		00n	0	0	0	0	0	0	0	0	0

Note: Data from Section 8 (Current Year) of Form R
98o 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
107-05-1		Allyl chloride	88	20	149,369	430	250	200	150,249	747	150,996
			95	21	52,698	95	0	481	53,274	13	53,287
			98o	24	70,809	5	0	2	70,816	860	71,676
			98n	2	91	0	0	0	91	864	955
			99o	27	79,237	25	0	0	79,262	1,586	80,848
			99n	3	253	1	0	8,189	8,443	4,526	12,969
			00o	26	146,598	541	0	0	147,139	3,625	150,764
			00n	2	145	0	0	0	145	0	145
7429-90-5	*	Aluminum (fume or dust)	88	357	3,681,998	91,518	250	3,177,625	6,951,391	14,482,254	21,433,645
			95	332	1,978,660	36,979	250	1,872,773	3,888,662	6,457,722	10,346,384
			98o	327	1,307,699	3,868	0	1,907,917	3,219,484	6,908,644	10,128,128
			98n	17	109,949	0	5	3,752,538	3,862,492	41,326	3,903,818
			99o	338	1,557,189	5,003	0	1,676,195	3,238,387	13,478,584	16,716,971
			99n	11	130,558	0	0	4,283,907	4,414,465	18,368	4,432,833
			00o	346	1,598,143	4,798	0	5,882,152	7,485,093	8,037,720	15,522,813
			00n	9	48,997	0	0	6,032,960	6,081,957	2,570,523	8,652,480
1344-28-1		Aluminum oxide (fibrous forms)	88	DC	DC	DC	DC	DC	DC	DC	DC
			95	61	133,416	2,805	0	593,000	729,221	4,499,941	5,229,162
			98o	56	26,772	750	0	31,405	58,927	2,947,504	3,006,431
			98n	10	35	0	0	15,572,355	15,572,390	47,030	15,619,420
			99o	51	111,845	756	0	23,736	136,337	2,839,676	2,976,013
			99n	12	338	0	0	30,727,558	30,727,896	347,172	31,075,068
			00o	58	137,990	558	0	124,750	263,298	3,386,488	3,649,786
			00n	13	281	0	8,449	42,366,339	42,375,069	245,240	42,620,309
20859-73-8	*	Aluminum phosphide	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	0	0	0	0	0	0	0
			98o	2	0	0	0	0	0	0	0
			98n	No reports							
			99o	2	0	0	0	0	0	0	0
			99n	2	4	0	0	0	4	153	157
			00o	1	0	0	0	0	0	0	0
			00n	1	0	0	0	0	0	0	0
834-12-8	*	Ametryn	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	5	836	83	0	5	924	250	1,174
			98o	5	1,168	51	0	0	1,219	0	1,219
			98n	No reports							
			99o	4	1,460	16	0	0	1,476	0	1,476
			99n	No reports							
			00o	4	1,310	12	0	0	1,322	0	1,322
			00n	No reports							
117-79-3	**	2-Aminoanthra-quinone	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

	Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
	Allyl chloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	520,000	0	186,000	1,756	750,979	412,357	52,568	1,923,660	65
		98o	780,000	68,000	5,349,016	321,228	243,860	194,934	70,054	7,027,092	1
		98n	0	0	0	0	127,076	282	955	128,313	0
		99o	23,000	44,000	157,078	236,934	301,187	648,363	78,649	1,489,211	1,000
		99n	0	0	0	0	192,972	1,090	12,967	207,029	0
		00o	650,000	82,000	5,335,210	226,011	3,837,075	192,839	205,611	10,528,746	45
		00n	0	0	0	0	72,424	536	145	73,105	0
*	Aluminum (fume or dust)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	15,378,165	24,327,521	0	164,604	15,628,491	332,192	8,219,058	64,050,031	690
		98o	15,724,778	29,746,083	0	4,267	18,287,637	176,034	10,005,822	73,944,621	29,298
		98n	0	210,000	0	0	226,635	550	3,781,933	4,219,118	10,982
		99o	15,586,205	28,584,699	0	5,058	21,740,641	425,726	15,920,488	82,262,817	10
		99n	0	0	0	0	289,500	127,156	4,320,550	4,737,206	0
		00o	17,261,315	20,059,822	0	3,954	23,384,277	609,566	14,973,309	76,292,242	0
		00n	0	0	0	0	185,900	1,512	8,564,225	8,751,637	0
	Aluminum oxide (fibrous forms)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	25,100	15,627	0	9,991	21,448	2,986,600	2,315,726	5,374,492	2
		98o	7,716,545	254,780	0	0	0	1,147,081	2,012,318	11,130,724	0
		98n	0	12,691	0	0	46,453	524,087	15,619,418	16,202,649	0
		99o	12,612,150	496,257	0	1,111	217	38,365	2,664,021	15,812,121	0
		99n	4	1,731	0	0	909,390	1,205,831	30,944,181	33,061,137	0
		00o	13,283,176	398,432	0	1,946	0	671,881	2,913,310	17,268,745	0
		00n	0	9,483	0	0	208,614	144,636	42,641,257	43,003,990	17
*	Aluminum phosphide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	0	0	0
		98o	0	0	0	0	0	0	0	0	0
		98n	No reports								
		99o	0	0	0	0	0	0	0	0	0
		99n	0	0	0	0	66,262	0	28,100	94,362	0
		00o	0	0	0	0	0	0	0	0	0
		00n	0	0	0	0	35,975	0	0	35,975	0
*	Ametryn	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	108,500	12,502	256	121,258	0
		98o	25	0	0	0	120,083	85,000	592	205,700	0
		98n	No reports								
		99o	25	0	0	0	46,079	12,000	801	58,905	0
		99n	No reports								
		00o	25	0	0	0	19,006	9,402	660	29,093	0
		00n	No reports								
**	2-Aminoanthraquinone	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
60-09-3	**	4-Aminoazo-benzene	88	1	0	0	537	0	537	0	537
			95	1	0	0	64	0	64	0	64
			98o	2	0	0	124	0	124	0	124
			98n	No reports							
			99o	2	0	0	287	0	287	0	287
			99n	No reports							
			00o	1	0	0	175	0	175	0	175
			00n	No reports							
92-67-1	**	4-Aminobiphenyl	88	1	10	0	4	0	14	0	14
			95	1	0	0	2	0	2	0	2
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	1	0	0	13	0	13	0	13
			99n	No reports							
			00o	1	1	0	47	0	48	0	48
			00n	No reports							
82-28-0	**	1-Amino-2-methyl-anthraquinone	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
33089-61-1	*	Amitraz	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							
61-82-5	*,**	Amitrole	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	2	1	0	0	0	1	0	1
			99o	No reports							
			99n	3	7	1	0	0	8	168	176
			00o	No reports							
			00n	3	5	0	0	0	5	0	5
7664-41-7	*	Ammonia	88	DC	DC	DC	DC	DC	DC	DC	DC
			95	2,944	159,284,079	9,334,788	23,959,031	5,650,138	198,228,036	1,600,475	199,828,511
			98o	2,752	156,259,993	7,345,467	25,647,620	3,342,826	192,595,906	2,040,864	194,636,770
			98n	262	5,818,432	364,668	502,580	1,426,446	8,112,126	29,639	8,141,765
			99o	2,647	147,127,387	7,273,973	25,635,785	2,889,196	182,926.341	3,122,209	186,048,550
			99n	254	6,753,408	268,341	610,000	3,838,494	11,470,243	221,689	11,691,932
			00o	2,562	131,524,721	6,775,957	27,110,871	2,693,596	168,105,145	4,074,534	172,179,680
			00n	269	7,523,130	784,697	224,399	3,079,177	11,611,403	333,593	11,944,996

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988).
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
** 4-Aminoazo-benzene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	3	0	64	67	0
	98o	0	0	0	0	0	74	124	198	0
	98n	No reports								
	99o	0	0	0	0	0	67	287	354	0
	99n	No reports								
	00o	0	0	0	0	0	31	175	206	0
	00n	No reports								
** 4-Aminobiphenyl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	91,000	0	2	91,002	0
	98o	0	0	0	0	98,000	810	0	98,810	0
	98n	No reports								
	99o	0	0	0	0	124,926	48	13	124,987	0
	99n	No reports								
	00o	0	0	0	0	74,329	32	48	74,409	0
	00n	No reports								
** 1-Amino-2-methyl-anthraquinone	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
* Amitraz	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	0	0	0	0	0	0	0	0	0
	99n	No reports								
	00o	0	0	0	0	0	0	0	0	0
	00n	No reports								
*,** Amitrole	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	0	0	0	0	22,788	0	1	22,789	0
	99o	No reports								
	99n	0	0	0	0	205,239	0	170	205,409	0
	00o	No reports								
	00n	0	0	0	0	114,179	791	5	114,975	0
* Ammonia	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	190,464,294	12,018,179	43,263,891	112,865	308,703,408	18,827,129	198,476,233	771,865,999	1,096,315
	98o	342,121,789	10,431,999	103,213,467	150,020	280,230,712	17,260,790	198,763,883	952,172,660	515,195
	98n	7,945,375	1,883	0	97,656	5,093,107	91,284	8,048,665	21,277,970	61,127
	99o	199,486,305	7,763,053	89,129,210	134,609	318,197,935	16,176,060	187,737,203	818,624,375	517,413
	99n	7,553,582	368	0	9,769	6,221,581	173,407	11,670,402	25,629,109	1,623
	00o	174,774,165	8,549,039	102,192,946	239,835	285,629,756	16,420,699	172,358,114	760,164,554	737,363
	00n	8,152,319	44,089	0	0	2,488,795	21,904	11,967,932	22,675,039	785

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR: not reportable (chemicals added to the TRI list after 1988)
DC: definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
101-05-3	*	Anilazine	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
62-53-3	*	Aniline	88	68	712,769	16,105	3,582,975	12,822	4,324,671	346,206	4,670,877
			95	67	200,799	8,943	1,221,381	4,193	1,435,316	21,600	1,456,916
			98o	69	216,517	19,549	1,076,445	252	1,312,763	25,401	1,338,164
			98n	12	696	0	85,466	0	86,162	1,479	87,641
			99o	70	176,497	15,782	533,803	1,013	727,095	55,479	782,574
			99n	10	302	1	0	0	303	344	647
			00o	68	194,485	12,704	736,295	297	943,781	217,260	1,161,041
			00n	13	790	0	25,802	0	26,592	0	26,592
90-04-0	**	o-Anisidine	88	6	2,293	285	0	250	2,828	3	2,831
			95	7	1,031	74	0	0	1,105	3	1,108
			98o	7	1,373	39	0	0	1,412	2	1,414
			98n	No reports							
			99o	7	1,587	14	0	0	1,601	1	1,602
			99n	No reports							
			00o	5	724	0	0	0	724	0	724
			00n	No reports							
104-94-9		p-Anisidine	88	2	10	250	0	250	510	0	510
			95	2	5	0	0	0	5	0	5
			98o	1	45	0	0	0	45	0	45
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
134-29-2	**	o-Anisidine hydrochloride	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
120-12-7		Anthracene	88	139	199,823	4,382	0	10,905	215,110	204,665	419,775
			95	70	81,471	4,943	0	939	87,353	48,140	135,493
			98o	73	56,059	580	0	3,564	60,203	69,966	130,169
			98n	3	15	0	0	0	15	0	15
			99o	70	75,827	515	0	3,185	79,527	65,057	144,584
			99n	4	303	0	0	166,319	166,622	7,172	173,794
			00o	74	27,050	1,016	0	171	28,237	53,762	81,999
			00n	5	255	0	0	0	255	5	260

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

	Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*	Anilazine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
*	Aniline	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	7,243,251	0	7,419,516	354,598	3,749,706	1,258,936	1,455,266	21,481,273	1,147
		98o	7,549,987	2	8,579,301	2,940,299	3,611,723	3,537,666	1,358,868	27,577,846	6,698
		98n	0	0	0	17,825	837,519	305,538	86,786	1,247,668	0
		99o	9,876,710	0	7,785,942	2,307,087	3,248,988	3,625,271	769,384	27,613,382	8,993
		99n	0	0	0	57,303	638,618	0	136	696,057	0
		00o	8,479,315	0	7,697,155	2,012,277	3,425,368	4,190,794	1,168,450	26,973,359	331
		00n	0	0	682	82,041	644,762	88,396	26,385	842,266	0
**	o-Anisidine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	143	0	14,704	5,100	1,061	21,008	0
		98o	0	0	2,756	0	991	5,176	1,413	10,336	0
		98n	No reports								
		99o	0	0	2,398	0	376	7,083	1,602	11,459	0
		99n	No reports								
		00o	0	0	1,182	0	0	1,983	724	3,889	0
		00n	No reports								
	p-Anisidine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	9	9	18	0
		98o	0	0	0	0	61	0	45	106	0
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
**	o-Anisidine hydrochloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
	Anthracene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	176,705	20,744	183,121	200,541	1,693,357	5,084	115,722	2,395,274	34,350
		98o	303,857	33,782	333,554	97,248	100,138	63,167	130,316	1,062,062	0
		98n	0	0	0	0	4,354	37	8	4,399	0
		99o	599,528	30,256	237,242	162,322	78,457	25,067	148,881	1,281,753	0
		99n	0	0	0	0	228,324	215	173,562	402,101	0
		00o	651,688	14,098	180,509	103,206	112,450	108,542	80,549	1,251,042	288
		00n	0	0	0	0	589,947	0	73	590,020	0

Note. Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
7440-36-0		Antimony	88	152	69,916	11,114	2,100	903,916	987,046	625,682	1,612,728
			95	135	34,310	6,592	0	18,786	59,688	122,760	182,448
			98o	119	7,015	14,471	0	30,542	52,028	328,162	380,190
			98n	11	78	47	18,994	1,226,450	1,245,569	71,776	1,317,345
			99o	123	10,544	13,411	0	51,625	75,580	331,315	406,895
			99n	6	93	0	0	715,803	715,896	19,118	735,014
			00o	123	9,527	17,401	0	55,690	82,618	171,044	253,662
			00n	6	129	0	0	119,754	119,883	113,231	233,114
--		Antimony compounds	88	272	166,290	31,178	9,200	1,935,018	2,141,686	2,281,080	4,422,766
			95	561	105,481	33,705	11,332	1,598,569	1,749,087	3,426,653	5,175,740
			98o	590	73,412	33,435	11,298	1,242,642	1,360,787	3,393,824	4,754,611
			98n	57	11,800	22,136	170,062	23,472,944	23,676,942	161,529	23,838,471
			99o	591	117,089	31,374	62,911	980,943	1,192,317	2,925,734	4,118,051
			99n	62	14,525	31,354	610,086	27,200,608	27,856,573	373,811	28,230,384
			00o	590	79,697	28,554	40,140	684,472	832,863	3,341,980	4,174,843
			00n	57	13,810	35,154	670,064	23,883,186	24,602,214	190,028	24,792,242
7440-38-2	**	Arsenic	88	78	7,687	1,282	0	181,267	190,236	65,342	255,578
			95	94	7,121	368	0	27,356	34,845	81,878	116,723
			98o	49	16,332	533	0	5,065	21,930	113,239	135,169
			98n	36	40,200	1,334	269,393	76,489,637	76,800,564	194,050	76,994,614
			99o	53	948	547	0	76,294	77,789	80,304	158,093
			99n	25	5,547	505	250	35,645,402	35,651,704	397,514	36,049,218
			00o	51	1,155	709	0	47,694	49,558	75,921	125,479
			00n	29	2,549	621	138,358	1,089,824	1,231,352	214,446	1,445,798
--	**	Arsenic compounds	88	274	268,528	6,243	27,400	4,946,184	5,248,355	1,407,110	6,655,465
			95	305	83,604	4,825	55,000	1,723,347	1,866,776	1,556,795	3,423,571
			98o	350	98,183	5,639	173,100	7,110,353	7,387,275	723,356	8,110,630
			98n	205	201,750	159,881	760,075	549,575,334	550,697,040	1,463,780	552,160,820
			99o	332	82,849	15,673	198,312	9,234,345	9,531,179	1,523,567	11,054,746
			99n	199	204,882	168,073	880,034	559,607,522	560,860,511	1,613,937	562,474,448
			00o	337	68,375	4,088	68,949	8,133,275	8,274,687	2,044,358	10,319,045
			00n	204	172,581	162,394	1,740,786	461,280,436	463,356,197	2,965,699	466,321,896
1332-21-4	*,**	Asbestos (friable)	88	146	48,496	10,699	0	2,111,880	2,171,075	12,135,707	14,306,782
			95	74	5,950	1	0	131,404	137,355	4,860,165	4,997,520
			98o	66	2,314	1	0	610,368	612,683	8,319,951	8,932,634
			98n	15	138	0	0	13,527,501	13,527,639	155,023	13,682,662
			99o	74	3,139	0	0	326,000	329,139	4,843,382	5,172,521
			99n	13	43	0	0	13,247,597	13,247,640	1	13,247,641
			00o	73	2,252	1	0	618,463	620,716	3,443,527	4,064,243
			00n	12	284	0	0	20,566,050	20,566,334	0	20,566,334
1912-24-9	*	Atrazine	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	20	22,689	1,656	0	637,036	661,381	101,631	763,012
			98o	23	30,971	2,756	336	554,456	588,519	15,780	604,299
			98n	5	12	0	0	73,687	73,699	3,690	77,389
			99o	23	20,915	1,212	172	599,739	622,038	22,795	644,833
			99n	5	31	0	0	44,173	44,204	133	44,337
			00o	22	33,796	1,034	198	501,732	536,760	74,457	611,217
			00n	5	11	0	0	0	11	277	288

Note. On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR: not reportable (chemicals added to the TRI list after 1988)
DC: definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information) For arsenic compounds, applies only to inorganic arsenic compounds

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
Antimony	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	3,831,021	5,487,501	0	1,730	818,680	95,864	127,063	10,361,859	459
	98o	4,625,143	727,639	30,405	66,692	308,925	52,241	340,759	6,151,804	6
	98n	0	0	0	0	0	38,018	1,284,899	1,322,917	0
	99o	5,276,182	1,167,889	0	0	351,900	108,459	289,408	7,193,838	3
	99n	0	0	0	0	0	0	734,829	734,829	0
	00o	4,094,077	1,428,805	0	0	380,219	70,600	182,750	6,156,451	260
	00n	0	0	0	0	54,209	79,614	151,878	285,701	0
Antimony compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	5,373,201	3,311,424	0	50,997	79,188	939,909	4,047,846	13,802,565	27,805
	98o	4,885,215	4,161,658	6,820	16,879	566,509	499,188	4,544,017	14,680,286	142,975
	98n	10,441	650	0	0	16,484	8	23,852,439	23,880,022	150
	99o	5,041,658	3,804,997	0	53,103	470,311	483,400	3,738,402	13,591,871	230,326
	99n	11,713	16,252	0	0	0	470	27,927,043	27,955,478	300,000
	00o	4,434,490	4,754,218	0	17,821	100,935	268,784	4,018,916	13,595,164	57,887
	00n	11,200	32,176	0	0	0	0	24,732,017	24,775,393	130,000
** Arsenic	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	1,072,279	162,386	7,700	496	13,030	45,969	66,757	1,368,617	749
	98o	3,403,468	185,974	0	0	64,685	3,058	223,051	3,880,236	2,533
	98n	542,954	0	0	0	60,800	17,033	76,970,133	77,590,920	0
	99o	1,502,341	567,744	0	0	74,034	3,652	164,470	2,312,241	1,171
	99n	0	142,814	0	0	0	111,931	36,314,249	36,568,994	0
	00o	1,017,212	78,797	0	0	79,003	7,097	128,288	1,310,397	485
	00n	0	0	0	0	0	3	1,570,193	1,570,196	36,200
** Arsenic compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	2,446,334	300,321	0	231	227,628	1,302,233	2,883,568	7,160,315	93,383
	98o	2,529,635	858,825	0	0	68,912	121,938	7,009,466	10,588,776	2,154,030
	98n	58,677	312	0	1	43,270	7,039	552,257,795	552,367,094	13
	99o	3,525,129	1,081,965	300	0	61,122	202,472	7,432,899	12,303,887	2,438,781
	99n	65,746	2,251	0	0	0	474	562,949,880	563,018,351	5,200,000
	00o	3,741,643	453,981	0	0	3,956	323,998	7,332,305	11,855,883	1,113,626
	00n	142,700	9,965	0	0	0	110	463,320,900	463,473,675	2,201,600
*,** Asbestos (friable)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	291,000	0	0	0	1,549,948	1,102	4,275,051	6,117,101	176,195
	98o	252,323	150	0	0	1,208,520	362	6,740,733	8,202,088	2,206,595
	98n	0	0	0	0	0	0	13,527,516	13,527,516	0
	99o	178,509	145	0	0	606,797	3,802	3,462,512	4,251,765	364,000
	99n	0	0	0	0	0	0	13,300,010	13,300,010	0
	00o	62,442	0	0	0	148,255	35,652	3,810,864	4,057,213	0
	00n	0	0	0	0	0	0	20,566,211	20,566,211	0
* Atrazine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	73	0	0	0	556,057	180,643	685,144	1,421,917	17,000
	98o	250	0	0	0	654,669	213,479	612,381	1,480,779	251
	98n	0	0	0	0	268,583	10	77,389	345,982	0
	99o	2,250	0	0	0	510,071	190,895	679,522	1,382,738	250
	99n	0	0	0	0	146,907	10	44,337	191,254	0
	00o	78,625	0	0	0	533,006	195,934	615,245	1,422,810	16,060
	00n	0	0	0	0	108,207	0	288	108,495	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information) For arsenic compounds, applies only to inorganic arsenic compounds

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number	Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
7440-39-3	Barium	88	143	266,811	18,650	0	6,721,686	7,007,147	1,883,903	8,891,050
		95	76	173,950	6,279	0	227,523	407,752	495,570	903,322
		98o	70	52,419	7,807	0	285,353	345,579	439,345	784,924
		98n	58	198,123	141,206	25,000	9,299,213	9,663,542	1,311,770	10,975,312
		99o	67	77,578	2,157	0	501,745	581,480	502,274	1,083,754
		99n	43	181,781	55,281	24,153	5,446,972	5,708,187	1,818,987	7,527,174
		00o	64	57,435	15,764	0	510,529	583,729	369,657	953,386
		00n	41	294,186	5,375	70,254	8,323,017	8,692,832	1,510,543	10,203,375
--	Barium compounds	88	630	1,027,383	104,302	2,773	5,791,655	6,926,113	17,487,312	24,413,425
		95	594	371,450	108,141	83,000	1,707,867	2,270,458	6,900,959	9,171,417
		98o	704	937,142	1,101,957	35,400	7,018,432	9,092,931	6,264,260	15,357,191
		98n	443	2,222,786	1,003,597	1,286,250	170,304,077	174,816,710	38,238,398	213,055,108
		99o	688	984,581	1,113,204	268	6,126,173	8,224,226	6,745,740	14,969,966
		99n	440	2,246,222	1,062,123	1,982,650	246,415,154	251,706,149	35,996,337	287,702,486
		00o	663	829,138	824,097	43	5,219,848	6,873,126	7,525,717	14,398,842
		00n	449	2,021,656	925,227	2,099,400	238,482,274	243,528,557	41,852,995	285,381,552
22781-23-3 *	Bendiocarb	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	2	555	0	0	0	555	0	555
		98o	3	2	0	0	0	2	0	2
		98n	1	3	0	0	0	3	10	13
		99o	3	5	0	0	0	5	0	5
		99n	1	11	0	0	0	11	10	21
		00o	4	0	0	0	0	0	0	0
		00n	1	1	0	0	0	1	0	1
1861-40-1 *	Benfluralin	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	8	2,977	0	0	0	2,977	14,000	16,977
		98o	8	1,564	0	0	0	1,564	3	1,567
		98n	No reports							
		99o	9	1,231	0	0	0	1,231	5	1,236
		99n	No reports							
		00o	6	750	0	0	0	750	0	750
		00n	No reports							
17804-35-2 *	Benomyl	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	2	0	0	0	0	0	0	0
		98o	3	1	0	0	0	1	0	1
		98n	1	10	0	0	0	10	5	15
		99o	3	7	0	0	0	7	0	7
		99n	2	0	0	0	0	0	254	254
		00o	3	6	0	0	0	6	0	6
		00n	1	0	0	0	0	0	0	0
98-87-3	Benzal chloride	88	3	5,258	0	0	0	5,258	7,308	12,566
		95	4	1,112	0	0	0	1,112	0	1,112
		98o	3	398	0	0	0	398	0	398
		98n	3	20	0	0	0	20	0	20
		99o	3	387	0	0	0	387	0	387
		99n	1	23	0	0	0	23	22	45
		00o	3	336	0	0	0	336	0	336
		00n	3	146	0	0	0	146	8	154

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
Barium	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	14,719	198,944	0	102	43,195	35,014	775,703	1,067,677	0
	98o	159,389	63,535	601,788	418	399,046	119,822	1,011,367	2,355,365	650
	98n	4,992	437,318	0	0	376,908	289,982	10,731,478	11,840,678	0
	99o	164,889	70,421	0	0	34,104	105,417	1,294,056	1,668,887	0
	99n	28,292	819,285	0	0	1,177,015	167,327	6,765,769	8,957,688	10
	00o	254,216	391,158	57,134	0	24,520	108,204	1,179,495	2,014,728	1,722
	00n	0	1,368,515	0	0	0	10	9,732,006	11,100,531	2,138,189
Barium compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	26,241,724	2,182,729	200	66,358	6,364,467	2,522,356	8,132,247	45,510,081	33,031
	98o	35,256,434	6,615,002	19,138	90,616	5,780,159	1,935,420	15,150,300	64,847,069	513
	98n	563,428	623,452	0	26,000	146,646	179,138	212,343,393	213,882,057	24,128
	99o	32,045,200	3,248,255	6,000	139,668	5,017,763	869,380	16,495,044	57,821,310	14,131
	99n	551,001	2,218,164	0	0	34,315	219,843	289,062,153	292,085,476	11,260
	00o	35,726,233	3,303,571	0	11,818	4,977,561	1,763,301	14,244,624	60,027,108	49,261
	00n	79,000	2,388,749	0	0	604,204	180,739	285,282,734	288,535,426	1,115
* Bendiocarb	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	560	0	0	0	0	0	560	1,120	0
	98o	0	0	0	0	0	580	0	580	0
	98n	0	0	0	0	0	0	30	30	0
	99o	0	0	0	0	0	581	0	581	0
	99n	0	0	0	0	56,392	0	11	56,403	0
	00o	0	0	0	0	0	470	0	470	0
	00n	0	0	0	0	13,974	772	1	14,747	0
* Benfluralin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	4,205	0	0	0	6,200	175	16,910	27,490	0
	98o	79,000	0	0	0	31	897	1,347	81,275	0
	98n	No reports								
	99o	87,000	0	0	0	0	335	1,223	88,558	0
	99n	No reports								
	00o	4,600	0	0	0	0	0	751	5,351	0
	00n	No reports								
* Benomyl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	482,000	122,000	0	604,000	0
	98o	0	0	45,000	65,600	20,200	20,263	1	151,064	0
	98n	0	0	0	0	95,374	0	20	95,394	0
	99o	0	0	0	107,108	13,757	16,128	7	137,000	0
	99n	0	0	0	0	31,995	0	16	32,011	0
	00o	0	0	0	42,029	13,577	4,760	6	60,372	0
	00n	0	0	0	0	17,097	732	0	17,829	0
Benzal chloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	260,000	2,800	0	1,105	263,905	0
	98o	0	0	0	120,000	84,000	200	400	204,600	0
	98n	0	0	0	0	235,247	0	20	235,267	0
	99o	0	0	0	550,000	83,000	74	388	633,462	0
	99n	0	0	0	0	676,990	0	45	677,035	0
	00o	0	0	0	1,100,000	71,000	92	327	1,171,419	0
	00n	0	0	0	0	1,240,555	922	157	1,241,634	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
55-21-0		Benzamide	88	1	500	250	250	0	1,000	750	1,750
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
71-43-2	*,**	Benzene	88	483	32,340,684	46,732	825,035	126,728	33,339,179	396,880	33,736,059
			95	477	9,401,776	21,290	282,642	18,583	9,724,291	71,391	9,795,682
			98o	488	7,270,122	15,073	504,109	237,544	8,026,848	141,586	8,168,434
			98n	524	362,385	3,948	71,697	2,727	440,757	65,792	506,549
			99o	490	7,270,481	13,579	617,825	18,732	7,920,617	77,467	7,998,084
			99n	495	357,531	14,318	222,803	125,127	719,779	82,473	802,252
			00o	502	6,399,187	19,356	360,772	12,217	6,791,532	30,310	6,821,842
			00n	493	496,068	3,304	259,478	38,753	797,603	18,003	815,606
92-87-5	**	Benzidine	88	No reports							
			95	No reports							
			98o	No reports							
			98n	4	38	0	0	0	38	0	38
			99o	2	7	0	0	0	7	0	7
			99n	4	6	0	0	0	6	165	171
			00o	No reports							
			00n	6	12	0	0	0	12	0	12
98-07-7	**	Benzoic trichloride	88	4	24,963	0	0	0	24,963	9,777	34,740
			95	6	6,496	0	0	0	6,496	250	6,746
			98o	6	2,253	0	0	0	2,253	330	2,583
			98n	2	2	0	0	0	2	110	112
			99o	6	2,175	0	0	0	2,175	400	2,575
			99n	4	9	0	0	0	9	172	181
			00o	3	1,839	0	0	0	1,839	290	2,129
			00n	3	2	0	0	0	2	0	2
191-24-2	***	Benzo(g,h,i) perylene	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	NR	NR	NR	NR	NR	NR	NR	NR
			98o	NR	NR	NR	NR	NR	NR	NR	NR
			98n	NR	NR	NR	NR	NR	NR	NR	NR
			99o	NR	NR	NR	NR	NR	NR	NR	NR
			99n	NR	NR	NR	NR	NR	NR	NR	NR
			00o	874	36,997.22	468.34	0.00	4,643.33	42,108.89	115,439.27	157,548.16
			00n	492	5,320.87	62.88	0.00	1,568.88	6,952.63	1,488.44	8,441.07
98-88-4		Benzoyl chloride	88	22	33,014	0	130,000	250	163,264	2,399	165,663
			95	21	16,749	0	0	0	16,749	1,460	18,209
			98o	25	11,905	0	0	0	11,905	0	11,905
			98n	1	88	0	0	0	88	3,980	4,068
			99o	22	10,351	0	0	0	10,351	0	10,351
			99n	2	74	0	0	0	74	2,393	2,467
			00o	22	11,063	0	0	0	11,063	0	11,063
			00n	1	61	0	0	0	61	2,006	2,067

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** PBT chemical added to list for 2000 reporting year See Chapter 3 for more information

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
		On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
Benzamide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
*,** Benzene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	47,987,022	507,033	20,222,877	1,579,954	54,065,446	2,604,429	9,787,538	136,754,299	65,951
	98o	37,350,029	727,451	16,882,843	1,086,610	48,421,108	3,810,904	8,163,209	116,442,154	51,715
	98n	944,441	502,057	569,513	8,361,689	3,913,360	303,193	912,488	15,506,741	34,996
	99o	36,876,532	703,723	24,765,316	1,120,210	49,891,109	3,247,179	8,001,225	124,605,294	67,201
	99n	2,304,679	56,660	619,481	1,494,490	5,620,387	971,281	698,427	11,765,405	23,436
	00o	21,103,490	1,826,345	42,167,963	1,189,753	63,073,414	2,229,744	6,835,080	138,425,789	32,809
	00n	1,534,957	26,024	983,019	1,445,952	6,103,980	89,934	809,646	10,993,512	9,099
** Benzidine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	0	0	0	0	101,123	58	34	101,215	0
	99o	0	0	89,000	0	5,538	60	2	94,600	0
	99n	0	0	0	0	311,452	0	169	311,621	0
	00o	No reports								
	00n	0	0	0	0	206,007	781	12	206,800	0
** Benzoic trichloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	3,001	150,000	32	6,242	159,275	0
	98o	0	0	0	20,000	160,000	34,870	2,557	217,427	0
	98n	0	0	0	0	15,768	0	112	15,880	0
	99o	0	0	0	20,000	110,000	1,608	2,572	134,180	0
	99n	0	0	0	0	176,025	0	178	176,203	0
	00o	0	0	0	0	150,000	431	2,118	152,549	0
	00n	0	0	0	0	48,478	780	2	49,260	0
*** Benzo(g,h,i) perylene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	NR	NR	NR	NR	NR	NR	NR	NR	NR
	98o	NR	NR	NR	NR	NR	NR	NR	NR	NR
	98n	NR	NR	NR	NR	NR	NR	NR	NR	NR
	99o	NR	NR	NR	NR	NR	NR	NR	NR	NR
	99n	NR	NR	NR	NR	NR	NR	NR	NR	NR
	00o	100,035.03	9,891.57	1,804,343.11	5,637.26	1,308,613.31	2,659.00	158,993.51	3,390,172.80	638.33
	00n	70.05	33.65	12.15	19 07	142,754.93	6.42	8,222.58	151,118.85	1.21
Benzoyl chloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	80	1,676,545	615,127	18,213	2,309,965	0
	98o	0	0	0	0	2,011,461	498,362	11,903	2,521,726	0
	98n	0	0	0	0	570,508	0	4,068	574,576	0
	99o	0	0	0	0	2,370,374	336,441	10,370	2,717,185	0
	99n	0	0	0	0	504,005	0	2,469	506,474	0
	00o	0	0	0	1,319	2,876,899	306,258	9,919	3,194,395	0
	00n	0	0	0	0	416,762	0	2,067	418,829	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** PBT chemical added to list for 2000 reporting year See Chapter 3 for more information

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
94-36-0	*	Benzoyl peroxide	88	50	6,294	0	5,350	36,050	47,694	23,954	71,648
			95	65	2,043	255	0	10,345	12,643	4,760	17,403
			98o	60	803	250	0	736	1,789	6,046	7,835
			98n	4	0	0	0	0	0	0	0
			99o	58	251	250	0	117	618	5,423	6,041
			99n	2	0	0	0	0	0	2	2
			00o	58	2,658	250	0	60	2,968	16,321	19,289
			00n	2	0	0	0	0	0	0	0
100-44-7		Benzyl chloride	88	51	43,329	640	0	500	44,469	9,687	54,156
			95	47	19,664	40	0	247	19,951	3,870	23,821
			98o	45	26,888	347	150	261	27,646	4,506	32,152
			98n	3	41	250	0	0	291	1	292
			99o	38	26,278	1,207	270	214	27,969	1,260	29,229
			99n	6	23	1	0	0	24	177	201
			00o	37	19,020	87	450	263	19,820	3,040	22,860
			00n	2	28	0	0	0	28	3	31
7440-41-7	**	Beryllium	88	12	2,763	74	0	37,000	39,837	3,160	42,997
			95	10	1,087	31	0	21,255	22,373	7,595	29,968
			98o	14	799	26	0	57,818	58,643	20,404	79,047
			98n	5	0	0	0	0	0	0	0
			99o	15	769	57	0	53,271	54,097	20,081	74,178
			99n	7	0	0	0	0	0	0	0
			00o	18	360	309	0	86,484	87,153	2,916	90,069
			00n	5	0	0	0	0	0	0	0
--	**	Beryllium compounds	88	5	862	17	0	12,000	12,879	8,261	21,140
			95	7	360	2	0	23,000	23,362	2,391	25,753
			98o	8	383	6	0	0	389	6,754	7,143
			98n	53	20,999	1,859	0	733,229	756,087	91,333	847,420
			99o	16	473	27	4,100	19	4,619	5,028	9,647
			99n	57	7,343	3,483	0	822,928	833,754	49,840	883,594
			00o	12	4,545	11	0	0	4,556	16,094	20,650
			00n	47	6,009	8,297	0	788,918	803,224	29,079	832,303
82657-04-3	*	Bifenthrin	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	10	0	0	5	15	0	15
			98o	5	760	5	0	0	765	0	765
			98n	1	0	0	0	0	0	19	19
			99o	5	546	0	0	0	546	0	546
			99n	No reports							
			00o	6	1,012	0	0	0	1,012	0	1,012
			00n	No reports							
92-52-4	*	Biphenyl	88	181	1,211,292	88,197	82,760	222,297	1,604,546	227,492	1,832,038
			95	136	744,976	6,242	30,337	71,864	853,419	38,088	891,507
			98o	123	536,524	4,105	29,574	1,159	571,362	49,880	621,242
			98n	10	36	0	0	0	36	55	91
			99o	126	675,977	8,949	4,177	24	689,127	56,857	745,984
			99n	10	3,348	0	0	2	3,350	2,615	5,965
			00o	120	621,274	5,829	1,100	339	628,542	36,363	664,905
			00n	10	289	0	0	0	289	5	294

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U.S.) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*	Benzoyl peroxide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	4,600	10,800	863	1,520	57,214	42,461	16,769	134,227	0
		98o	10,364	0	0	1,191	86,629	49,139	8,972	156,295	0
		98n	0	0	0	0	12,360	0	0	12,360	0
		99o	6,935	0	0	1,885	124,112	91,458	6,476	230,866	0
		99n	0	0	0	0	15,291	0	2	15,293	0
		00o	9,153	0	0	290	65,663	78,180	21,261	174,547	0
		00n	0	0	0	0	16,419	0	0	16,419	0
	Benzyl chloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	1,000	0	25,481	430,300	256,947	11,027	21,421	746,176	80
		98o	4,800	0	17,000	420,878	250,910	76,610	31,360	801,558	0
		98n	0	0	0	0	483,947	0	66	484,013	0
		99o	0	0	0	392,457	169,516	37,127	28,550	627,650	0
		99n	0	0	0	0	678,251	0	198	678,449	0
		00o	208	0	0	520,751	172,288	5,731	22,162	721,140	18
		00n	0	0	0	0	580,423	0	31	580,454	0
**	Beryllium	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	39,689	19,263	0	0	780	423	27,369	87,524	0
		98o	160,399	84,146	0	0	10	8	63,356	307,919	0
		98n	0	0	0	0	0	0	0	0	0
		99o	101,065	24,154	0	0	0	966	66,436	192,621	0
		99n	0	0	0	0	0	0	0	0	0
		00o	622,263	66,837	0	0	9	1,319	89,904	780,332	40
		00n	0	0	0	0	0	0	0	0	0
**	Beryllium compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	7	23,880	0	0	0	1,011	24,661	49,559	0
		98o	0	26,450	0	0	0	1,090	1,833	29,373	0
		98n	9,700	0	0	0	194	0	846,933	856,827	300
		99o	0	38,384	0	0	0	1,349	8,089	47,822	0
		99n	9,700	0	0	0	0	0	898,112	907,812	0
		00o	0	33,768	0	0	0	486	20,113	54,367	0
		00n	9,709	0	0	0	0	0	844,699	854,408	0
*	Bifenthrin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	10	10	20	0
		98o	0	0	0	0	0	402	230	632	0
		98n	0	0	0	0	11,275	0	19	11,294	0
		99o	0	0	0	0	1	2,069	71	2,141	0
		99n	No reports								
		00o	0	0	0	0	1	3,592	178	3,771	0
		00n	No reports								
*	Biphenyl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	268,053	184,081	1,088,381	346,055	963,993	615,716	904,728	4,371,007	11,635
		98o	306,564	288,334	1,209,699	131,946	495,349	764,962	626,662	3,823,516	3,938
		98n	0	0	0	12,840	279,525	263	89	292,717	0
		99o	446,648	273,973	2,098,273	150,054	668,179	610,722	765,261	5,013,110	4,189
		99n	0	0	0	42,583	711,018	2,824	3,152	759,577	5
		00o	230,846	727,786	1,864,031	126,895	2,808,537	599,683	682,277	7,040,055	4,543
		00n	0	0	109	0	1,193,457	27	156	1,193,749	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
111-91-1		Bis (2-chloroethoxy) methane	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	12,510	0	250	0	12,760	0	12,760
			98o	1	1,434	0	930	1,024	3,388	0	3,388
			98n	1	0	0	0	0	0	0	0
			99o	1	1,312	0	3,697	0	5,009	0	5,009
			99n	1	2	1	0	0	3	4	7
			00o	1	1,330	0	9,302	0	10,632	450	11,082
			00n	2	0	0	0	0	0	0	0
111-44-4	*	Bis(2-chloroethyl) ether	88	8	4,922	1,351	0	0	6,273	0	6,273
			95	11	564	3	0	0	567	0	567
			98o	11	844	4	0	0	848	1	849
			98n	3	0	0	0	0	0	0	0
			99o	12	353	23	0	0	376	296	672
			99n	3	11	1	0	0	12	17	29
			00o	10	423	2	0	0	425	6,120	6,545
			00n	4	44	0	0	0	44	0	44
542-88-1	**	Bis(chloromethyl) ether	88	2	1	0	0	0	1	0	1
			95	2	0	0	0	0	0	0	0
			98o	2	0	0	0	0	0	0	0
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	2	4	0	0	0	4	153	157
			00o	1	0	0	0	0	0	0	0
			00n	1	0	5	0	0	5	0	5
108-60-1		Bis(2-chloro-1-methylethyl) ether	88	2	7,959	30,000	0	0	37,959	0	37,959
			95	2	6,130	0	0	0	6,130	0	6,130
			98o	2	3,360	46	0	2	3,408	0	3,408
			98n	No reports							
			99o	2	4,110	2	0	2	4,114	0	4,114
			99n	No reports							
			00o	2	2,861	2	0	4	2,867	0	2,867
			00n	2	61	0	0	0	61	0	61
56-35-9	*	Bis(tributyltin) oxide	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	0	32	0	0	32	13,873	13,905
			98o	3	0	6	0	2	8	3,372	3,380
			98n	No reports							
			99o	5	10	6	0	1	17	3,923	3,940
			99n	No reports							
			00o	4	0	7	0	1	8	22,745	22,753
			00n	No reports							
10294-34-5		Boron trichloride	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	4	5	0	0	0	5	0	5
			98o	5	750	0	0	0	750	0	750
			98n	No reports							
			99o	8	350	0	0	0	350	0	350
			99n	No reports							
			00o	11	605	0	0	0	605	0	605
			00n	1	0	0	0	0	0	0	0

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC. definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
	Bis(2-chloroethoxy) methane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	12,796	12,796	0
		98o	0	0	0	0	0	15	3,388	3,403	0
		98n	0	0	0	0	0	0	0	0	0
		99o	0	0	0	0	0	0	5,009	5,009	0
		99n	0	0	0	0	28,000	0	2	28,002	0
		00o	0	0	0	0	0	0	11,099	11,099	0
		00n	0	0	0	0	19,055	795	0	19,850	0
*	Bis(2-chloroethyl) ether	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	146,118	302,700	203,775	0	88,893	570	742,056	0
		98o	0	159,909	426,404	9,541	540,375	349,619	853	1,486,701	0
		98n	0	0	0	0	10,234	0	0	10,234	0
		99o	0	142,932	1,280,773	6,127	1,627,378	455,565	384	3,513,159	0
		99n	0	0	0	0	215,220	0	26	215,246	0
		00o	0	0	927,539	5,321	1,417,618	625,137	424	2,976,039	0
		00n	0	0	0	0	158,644	791	44	159,479	0
**	Bis(chloromethyl) ether	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	13,000	0	0	13,000	0
		98o	0	0	0	0	36,500	0	0	36,500	0
		98n	No reports								
		99o	0	0	0	0	34,000	0	0	34,000	0
		99n	0	0	0	0	111,933	0	157	112,090	0
		00o	0	0	0	0	37,000	0	0	37,000	0
		00n	0	0	0	0	67,878	0	3	67,881	0
	Bis(2-chloro-1-methylethyl) ether	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	5,200,000	0	8,540,000	0	10,840,000	0	6,100	24,586,100	1
		98o	8,900,000	0	6,000,000	0	1,410,000	0	3,500	16,313,500	0
		98n	No reports								
		99o	2,800,000	0	7,210,000	0	5,149,000	0	4,100	15,163,100	0
		99n	No reports								
		00o	0	0	5,433,123	0	201,100,128	0	2,869	206,536,120	0
		00n	0	0	0	0	1,002,615	771	61	1,003,447	0
*	Bis(tributyltin) oxide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	39,840	0	0	336	0	13,903	54,079	0
		98o	0	58,478	0	0	336	0	3,380	62,194	0
		98n	No reports								
		99o	0	35,864	0	0	346	530	4,367	41,107	0
		99n	No reports								
		00o	0	49,641	0	0	257	0	22,752	72,650	7,834
		00n	No reports								
	Boron trichloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	5,000	0	0	0	200	0	1	5,201	0
		98o	6,700	0	0	0	53,000	0	335	60,035	2
		98n	No reports								
		99o	9,100	0	0	0	16,000	10,000	145	35,245	0
		99n	No reports								
		00o	85,596	0	0	0	16,761	0	347	102,704	2
		00n	0	0	0	0	0	0	0	0	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR: not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number	Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
7637-07-2	Boron trifluoride	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	24	25,019	0	0	0	25,019	929	25,948
		98o	23	38,142	5	0	0	38,147	0	38,147
		98n	No reports							
		99o	23	16,722	0	0	0	16,722	0	16,722
		99n	No reports							
		00o	26	11,595	0	0	0	11,595	250	11,845
		00n	No reports							
314-40-9 *	Bromacil	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	5	500	27,897	0	0	28,397	0	28,397
		98o	1	10	0	0	0	10	0	10
		98n	1	25	0	0	0	25	0	25
		99o	1	10	0	0	0	10	0	10
		99n	1	0	0	0	0	0	0	0
		00o	1	0	0	0	0	0	0	0
		00n	1	0	0	0	0	0	0	0
53404-19-6 *	Bromacil, lithium salt	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	No reports							
		98o	No reports							
		98n	No reports							
		99o	No reports							
		99n	No reports							
		00o	No reports							
		00n	No reports							
7726-95-6 *	Bromine	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	46	112,466	880	7	10	113,363	250	113,613
		98o	52	109,083	7,110	7	7,705	123,905	3	123,908
		98n	4	84	0	0	0	84	2	86
		99o	48	247,390	15	0	7,705	255,110	30,508	285,618
		99n	2	33	0	0	0	33	7,360	7,393
		00o	46	268,547	10	0	40,505	309,062	936	309,998
		00n	3	57	0	0	18,000	18,057	0	18,057
35691-65-7 *	1-Bromo-1-(bromomethyl)-1,3-propane-dicarbonitrile	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	1	0	0	0	0	0	0	0
		98o	2	0	0	0	0	0	0	0
		98n	No reports							
		99o	4	0	0	0	0	0	0	0
		99n	No reports							
		00o	5	0	0	0	0	0	0	0
		00n	No reports							
353-59-3	Bromochloro-difluoromethane (Halon 1211)	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	4	4,811	0	0	0	4,811	0	4,811
		98o	4	3,673	0	0	0	3,673	0	3,673
		98n	No reports							
		99o	4	3,979	0	0	0	3,979	0	3,979
		99n	No reports							
		00o	4	0	0	0	0	0	0	0
		00n	1	923	0	0	0	923	0	923

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

	Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
	Boron trifluoride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	425,701	1,027	24,369	451,097	190
		98o	0	0	0	35	462,635	15,255	35,396	513,321	449
		98n	No reports								
		99o	0	0	0	0	509,864	1,130	16,452	527,446	181
		99n	No reports								
		00o	0	0	0	31	748,803	1,148	11,232	761,214	25
		00n	No reports								
*	Bromacil	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	5	0	0	0	30,687	27,829	27,947	86,468	0
		98o	0	0	0	0	0	0	1,192	1,192	0
		98n	0	0	0	0	32,434	0	25	32,459	0
		99o	0	0	0	0	0	0	850	850	0
		99n	0	0	0	0	17,343	0	0	17,343	0
		00o	0	0	0	0	0	0	0	0	0
		00n	0	0	0	0	20,647	0	0	20,647	0
*	Bromacil, lithium salt	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
*	Bromine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	4,960,000	740	0	0	14,808,669	283,435	112,386	20,165,230	28
		98o	5,670,000	230	0	0	18,611,926	20,781	127,333	24,430,270	194
		98n	0	0	0	162,356	12,791	0	86	175,233	0
		99o	130,800	430	0	0	906,764	483,028	254,397	1,775,419	798
		99n	0	2,991	0	0	11,373	0	7,393	21,757	0
		00o	319,700	1,697,423	0	0	568,515	347,166	309,092	3,241,896	94
		00n	0	0	0	0	10,452	5	18,057	28,514	0
*	1-Bromo-1-(bromomethyl)-1,3-propane-dicarbonitrile	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	10,957	0	10,957	0
		98o	0	0	0	0	11,000	9,824	0	20,824	0
		98n	No reports								
		99o	0	0	0	0	0	9,595	0	9,595	0
		99n	No reports								
		00o	0	0	0	0	0	9,570	0	9,570	0
		00n	No reports								
	Bromochloro-difluoromethane (Halon 1211)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	282,800	0	0	0	0	0	4,832	287,632	0
		98o	501,947	0	0	0	0	0	3,673	505,620	174
		98n	No reports								
		99o	485,900	0	0	0	0	0	3,827	489,727	152
		99n	No reports								
		00o	0	0	0	0	0	0	0	0	0
		00n	241,000	0	0	0	0	0	923	241,923	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
75-25-2		Bromoform	88	2	0	8,600	0	0	8,600	0	8,600
			95	No reports							
			98o	No reports							
			98n	3	3	0	0	0	3	0	3
			99o	1	5	0	0	0	5	0	5
			99n	1	2	1	0	0	3	4	7
			00o	No reports							
			00n	4	7	0	0	0	7	0	7
74-83-9	*	Bromomethane	88	36	2,784,795	0	1,546	0	2,786,341	0	2,786,341
			95	43	2,601,734	14	3,817	0	2,605,565	0	2,605,565
			98o	45	1,556,607	30	230	11	1,556,878	0	1,556,878
			98n	2	5	0	0	0	5	0	5
			99o	43	1,420,922	29	0	4	1,420,955	1,603	1,422,558
			99n	3	186	0	0	0	186	0	186
			00o	44	930,369	32	0	9	930,410	0	930,410
			00n	5	2	5	5	0	12	0	12
75-63-8		Bromotrifluoro-methane (Halon 1301)	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	8	33,632	0	0	0	33,632	0	33,632
			98o	6	26,842	0	0	0	26,842	0	26,842
			98n	No reports							
			99o	6	30,825	0	0	0	30,825	0	30,825
			99n	No reports							
			00o	6	26,061	0	0	0	26,061	0	26,061
			00n	1	1,838	0	0	0	1,838	0	1,838
1689-84-5	*	Bromoxynil	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	6	0	0	0	6	990	996
			98o	2	506	0	0	0	506	1,483	1,989
			98n	No reports							
			99o	3	3	0	0	0	3	790	793
			99n	No reports							
			00o	2	0	0	0	0	0	0	0
			00n	No reports							
1689-99-2	*	Bromoxynil octanoate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	4	500	0	0	0	500	13,569	14,069
			98o	5	1,566	0	0	0	1,566	14,420	15,986
			98n	No reports							
			99o	6	519	0	0	0	519	8,926	9,445
			99n	No reports							
			00o	5	37	0	0	0	37	0	37
			00n	1	0	0	15,462	0	15,462	0	15,462
357-57-3		Brucine	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	No reports							
			99n	2	4	0	0	0	4	153	157
			00o	No reports							
			00n	1	0	0	0	0	0	0	0

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

	Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
	Bromoform	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	0	0	0	0	10,594	2	3	10,599	0
		99o	0	0	0	0	216	2	1	219	0
		99n	0	0	0	0	18,000	0	1	18,001	0
		00o	No reports								
		00n	0	0	0	0	25,091	774	7	25,872	0
*	Bromomethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	165,182	0	101,000	380	4,876,073	0	2,578,001	7,720,636	0
		98o	12,780	0	222,300	280	488,585	0	1,553,094	2,277,039	14,067
		98n	0	0	0	0	3,007	30	1	3,038	0
		99o	295,500	0	273,800	160	947,126	2,455	1,335,442	2,854,483	15,326
		99n	0	0	0	0	178,475	0	187	178,662	0
		00o	85,403	0	267,700	2,800	887,246	46	947,100	2,190,295	15
		00n	0	0	0	0	154,696	724	12	155,432	0
	Bromotrifluoro-methane (Halon 1301)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	200,661	0	0	0	0	0	36,155	236,816	805
		98o	583,803	0	0	0	0	0	26,592	610,395	6,468
		98n	No reports								
		99o	647,796	0	0	0	0	0	29,446	677,242	1,629
		99n	No reports								
		00o	39,480	0	0	0	0	0	24,393	63,873	1,873
		00n	171,374	0	0	0	0	0	1,838	173,212	0
*	Bromoxynil	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	996	996	0
		98o	0	0	0	0	0	0	1,244	1,244	0
		98n	No reports								
		99o	0	0	0	0	0	0	790	790	0
		99n	No reports								
		00o	0	0	0	0	0	0	0	0	0
		00n	No reports								
*	Bromoxynil octanoate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	173	13,689	13,862	0
		98o	0	0	0	0	0	40	21,215	21,255	0
		98n	No reports								
		99o	0	0	0	0	0	397	13,525	13,922	0
		99n	No reports								
		00o	0	0	0	0	0	171	3,227	3,398	0
		00n	0	0	0	0	0	0	15,462	15,462	0
	Brucine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	0	0	0
		98o	0	0	0	0	0	0	0	0	0
		98n	No reports								
		99o	No reports								
		99n	0	0	0	0	94,553	0	157	94,710	0
		00o	No reports								
		00n	0	0	0	0	67,901	0	0	67,901	0

Note. Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	On-site Releases: Surface Water Discharges Pounds	On-site Releases: Underground Injection Pounds	On-site Releases: Releases to Land Pounds	On-site Releases: Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
106-99-0	**	1,3-Butadiene	88	157	7,004,622	522,504	1,500	7,817	7,536,443	185,398	7,721,841
			95	188	3,048,063	5,393	0	277	3,053,733	4,892	3,058,625
			98o	191	2,747,039	8,834	732	7,998	2,764,603	2,067	2,766,670
			98n	6	1,035	0	0	0	1,035	500	1,535
			99o	192	1,956,986	1,900	720	127	1,959,733	2,066	1,961,799
			99n	4	2,178	0	0	0	2,178	505	2,683
			00o	192	2,155,211	1,163	850	60,140	2,217,364	185,856	2,403,220
			00n	5	10,230	0	0	0	10,230	5	10,235
141-32-2		Butyl acrylate	88	166	411,862	3,528	0	602	415,992	18,766	434,758
			95	164	230,275	2,919	0	559	233,753	73,591	307,344
			98o	158	206,776	7,790	0	546	215,112	25,473	240,585
			98n	12	6,009	0	0	0	6,009	22,581	28,590
			99o	157	241,982	8,747	156	546	251,431	31,763	283,194
			99n	12	3,031	0	0	0	3,031	445	3,476
			00o	159	231,172	14,566	271	245	246,254	22,776	269,030
			00n	8	1,841	0	0	0	1,841	6	1,847
71-36-3		n-Butyl alcohol	88	1,109	37,715,221	128,130	3,006,660	175,819	41,025,830	924,519	41,950,349
			95	1,125	26,123,933	115,353	2,263,357	4,631	28,507,274	297,608	28,804,882
			98o	1,028	21,680,571	94,523	3,169,538	5,209	24,949,841	382,723	25,332,564
			98n	179	27,073	0	61,068	370	88,511	16,065	104,576
			99o	977	21,051,426	56,286	3,097,813	3,226	24,208,751	654,151	24,862,902
			99n	173	31,534	1	91,230	1,400	124,165	76,700	200,865
			00o	958	19,621,927	35,156	3,783,366	9,977	23,450,426	311,575	23,762,001
			00n	165	29,680	753	56,282	53,500	140,215	65,610	205,825
78-92-2	*	sec-Butyl alcohol	88	92	1,097,163	122,291	0	2,600	1,222,054	21,351	1,243,405
			95	115	908,143	6,782	136,172	2,805	1,053,902	18,376	1,072,278
			98o	118	1,007,905	3,950	169,243	7	1,181,105	16,535	1,197,640
			98n	36	2,531	0	0	13,000	15,531	50	15,581
			99o	109	902,230	11,020	145,995	5	1,059,250	16,931	1,076,181
			99n	39	2,981	0	0	13,703	16,684	505	17,189
			00o	113	773,496	11,924	119,420	1	904,841	16,925	921,766
			00n	31	1,383	0	0	12,473	13,856	499	14,355
75-65-0	*	tert-Butyl alcohol	88	54	1,574,137	14,989	674,798	818	2,264,742	56,502	2,321,244
			95	91	657,818	20,183	1,082,071	751	1,760,823	30,783	1,791,606
			98o	84	420,564	30,330	861,956	7,352	1,320,202	178,217	1,498,419
			98n	26	25,804	21	0	1,092	26,917	4,029	30,946
			99o	82	366,121	15,354	770,634	751	1,152,860	76,468	1,229,328
			99n	34	31,066	260	0	5	31,331	1,813	33,144
			00o	85	750,386	8,396	766,198	502	1,525,482	107,919	1,633,401
			00n	26	25,024	266	0	0	25,290	7,455	32,745
106-88-7	**	1,2-Butylene oxide	88	18	99,931	3,500	0	250	103,681	898	104,579
			95	15	11,083	1	0	0	11,084	5	11,089
			98o	13	10,581	8,401	0	0	18,982	0	18,982
			98n	1	1	0	0	0	1	0	1
			99o	13	11,619	2,402	0	0	14,021	0	14,021
			99n	1	10	0	0	0	10	0	10
			00o	14	7,807	5,700	0	40	13,547	0	13,547
			00n	1	10	0	0	0	10	0	10

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
** 1,3-Butadiene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	5,513,939	13,653,736	31,775,720	34,519	58,474,775	96,310	2,877,071	112,426,070	200,544
	98o	5,428,029	15,575,833	15,244,040	260,947	53,274,984	3,918,622	2,730,216	96,432,671	776,815
	98n	0	0	0	218,662	130,866	9,120	1,035	359,683	0
	99o	5,488,810	11,539,996	38,304,604	433,581	52,241,471	307,643	1,958,903	110,275,008	59,750
	99n	0	0	0	27,320	232,521	1,620	2,068	263,529	0
	00o	5,231,318	10,902,156	23,915,854	338,110	425,563,794	384,280	2,189,481	468,524,993	59,799
	00n	0	0	0	488,470	190,771	26,500	10,222	715,963	0
Butyl acrylate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	173,995	207,325	4,059,471	1,143,139	4,174,080	228,382	301,235	10,287,627	5,264
	98o	270,060	950	3,912,299	932,014	11,726,284	87,681	225,309	17,154,597	6,129
	98n	0	0	0	91,548	178,664	261	7,554	278,027	0
	99o	330,066	1,466	3,045,944	600,039	2,691,675	178,138	265,759	7,113,087	1,406
	99n	0	0	12,753	61,497	237,812	3,797	3,218	319,077	16
	00o	334,515	197	1,184,188	203,362	1,595,380	191,369	254,925	3,763,936	211
	00n	0	0	277,598	455,763	40,602	226	2,439	776,628	4
n-Butyl alcohol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	8,438,990	3,407,032	24,695,600	8,577,868	38,017,258	3,417,863	28,869,735	115,424,346	52,280
	98o	8,306,964	2,580,773	29,236,373	8,359,539	42,937,109	5,281,467	25,607,070	122,309,295	58,850
	98n	1,680,333	8,376	32,154	9,776,544	1,739,894	962,935	94,634	14,294,870	16
	99o	9,132,673	2,278,340	33,308,342	8,434,431	32,589,970	4,767,663	25,075,184	115,586,603	11,234
	99n	2,619,863	7,646	37,137	4,621,391	2,708,082	1,192,341	127,726	11,314,186	10,355
	00o	13,289,088	2,629,084	25,206,288	9,614,896	31,661,841	4,813,481	24,205,351	111,420,029	8,199
	00n	2,086,783	1,350	23,200	2,638,578	2,615,521	388,879	256,575	8,010,886	117
* sec-Butyl alcohol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	748,440	24,774	13,041,102	6,275,927	2,249,797	125,101	1,089,469	23,554,610	2,800
	98o	171,903	9,319	10,701,253	1,012,818	1,532,676	253,034	1,207,909	14,888,912	0
	98n	220	0	0	246,002	49	236,962	15,367	498,600	0
	99o	380,567	76,228	12,708,755	992,985	1,394,860	140,513	1,084,188	16,778,096	0
	99n	14	0	0	416,457	51,604	35,246	16,203	519,524	0
	00o	414,276	17,826	11,128,795	987,167	1,948,603	320,935	931,976	15,749,578	1,105
	00n	27	0	0	4,704	12,885	4,209	14,640	36,465	0
* tert-Butyl alcohol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	466,023	2,256	64,310,733	27,469,833	2,447,778	1,794,551	2,230,055	98,721,229	2,086
	98o	662,776	231,209	37,637,302	7,506,442	2,331,750	1,841,732	1,494,130	51,705,341	58
	98n	31,188	200	0	3,841,737	129,572	11,110	23,110	4,036,917	15
	99o	658,568	19,879	38,801,186	8,108,339	1,673,758	1,754,071	1,567,501	52,583,302	21,101
	99n	50,563	122	0	898,535	258,975	35,514	29,908	1,273,617	23
	00o	1,200,979	12,929	18,304,607	7,979,985	2,052,426	2,214,434	1,621,955	33,387,315	297
	00n	54,221	87	0	580,122	1,393,079	4,967	25,168	2,057,644	2,530
** 1,2-Butylene oxide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	990	0	330,194	329,270	93	10,804	671,351	0
	98o	1	0	0	275,443	498,660	307	18,815	793,226	0
	98n	0	0	0	50	0	35	1	86	0
	99o	2	0	0	282,059	382,495	620	14,294	679,470	0
	99n	0	0	0	150	6	0	1	157	0
	00o	0	0	0	316,541	154,942	730	13,530	485,743	0
	00n	0	0	0	100	0	0	101	201	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
123-72-8	*	Butyraldehyde	88	26	2,218,692	3,812	1,997	31	2,224,532	117,741	2,342,273
			95	29	291,440	821	149,783	10	442,054	41	442,095
			98o	32	289,834	618	29,000	1,478	320,930	1,663	322,593
			98n	1	122	0	0	0	122	3	125
			99o	34	295,543	466	29,003	149,000	474,012	6,827	480,839
			99n	No reports							
			00o	31	403,531	3,670	29,003	0	436,204	12,204	448,408
			00n	No reports							
7440-43-9	**	Cadmium	88	90	22,430	2,598	0	94,602	119,630	155,313	274,943
			95	48	12,217	462	0	19,860	32,539	90,519	123,058
			98o	51	2,129	542	0	158,670	161,341	92,327	253,668
			98n	20	1,318	0	166,607	2,282,416	2,450,341	60,410	2,510,751
			99o	47	2,397	691	0	31,889	34,977	41,159	76,136
			99n	19	1,920	0	61,000	1,628,788	1,691,708	319,054	2,010,762
			00o	47	2,021	792	0	2,730	5,543	7,501	13,044
			00n	17	271	0	69,000	661,165	730,436	157,137	887,573
--	**	Cadmium compounds	88	117	118,978	1,549	2,409	294,877	417,813	1,067,942	1,485,755
			95	120	54,853	948	34,109	797,916	887,826	1,743,893	2,631,719
			98o	95	68,890	923	130,033	778,483	978,329	1,727,155	2,705,484
			98n	39	16,392	1,218	96,875	7,912,729	8,027,214	290,254	8,317,468
			99o	94	29,835	1,501	23	656,007	687,366	676,199	1,363,565
			99n	37	4,006	765	100,000	9,835,672	9,940,443	171,645	10,112,088
			00o	102	25,772	8,145	34	595,799	629,750	2,074,910	2,704,660
			00n	31	4,520	610	110,250	5,583,238	5,698,618	413,761	6,112,379
156-62-7	*	Calcium cyanamide	88	3	12,600	0	0	66,000	78,600	0	78,600
			95	5	10	0	0	0	10	0	10
			98o	4	134	0	0	0	134	0	134
			98n	No reports							
			99o	4	250	0	0	0	250	0	250
			99n	No reports							
			00o	3	250	0	0	0	250	0	250
			00n	No reports							
133-06-2	*	Captan	88	18	14,869	750	5,100	1,000	21,719	12,434	34,153
			95	15	7,280	5	0	5	7,290	3,868	11,158
			98o	11	9,211	5	0	0	9,216	1,761	10,977
			98n	3	2	0	0	0	2	138	140
			99o	13	5,111	5	0	0	5,116	1,070	6,186
			99n	1	0	0	0	0	0	27	27
			00o	13	4,120	5	0	0	4,125	1,985	6,110
			00n	1	0	0	0	0	0	0	0
63-25-2	*	Carbaryl	88	23	7,923	877	0	500	9,300	6,198	15,498
			95	21	7,824	10	0	1,060	8,894	26,861	35,755
			98o	22	7,824	10	0	100	7,934	9,156	17,090
			98n	3	7	0	0	0	7	132	139
			99o	15	5,276	5	0	8,405	13,686	41,376	55,062
			99n	3	4	0	0	11,743	11,747	27	11,774
			00o	15	4,589	5	0	0	4,594	4,085	8,679
			00n	2	1	0	0	0	1	0	1

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Butyraldehyde	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	1,300	2,545,861	22,000	1,982,004	169,714	440,778	5,161,657	7
	98o	1,500	31,000	2,136,982	20,760	1,928,392	651,126	317,716	5,087,476	5,207
	98n	0	0	0	19,950	392	409	122	20,873	0
	99o	1,500	1,200	4,909,209	40,812	7,983,588	176,272	409,140	13,521,721	81,117
	99n	No reports								
	00o	0	1,200	3,177,064	544,327	2,198,817	503,656	477,280	6,902,344	831
	00n	No reports								
** Cadmium	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	1,471,697	545,490	29,191	633	91,725	53,384	74,476	2,266,596	3,911
	98o	1,101,823	320,139	0	0	27,779	52,294	276,432	1,778,467	9,410
	98n	0	8,110	0	0	0	10,742	2,462,721	2,481,573	0
	99o	88,054	202,689	0	0	29,363	11,102	120,187	451,395	0
	99n	143,393	139,104	0	0	0	471	1,699,147	1,982,115	10
	00o	17,347	153,064	0	0	28,917	15,459	96,262	311,049	0
	00n	0	10,495	0	0	0	201,042	754,618	966,155	0
** Cadmium compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	8,221,097	1,482,852	0	1,082	87,602	138,528	2,509,561	12,440,722	11,697
	98o	2,561,776	643,605	0	5,236	3,225	47,340	3,218,632	6,479,814	59,618
	98n	4,761	72,129	0	0	3,000	4,772	8,317,210	8,401,872	85
	99o	3,004,157	636,397	0	212	4,654	19,971	1,824,458	5,489,849	39,149
	99n	77,582	28,769	0	0	0	1,050	6,644,038	6,751,439	120,000
	00o	3,275,097	792,926	0	0	5,151	109,813	2,706,184	6,889,171	28,937
	00n	67,228	14,630	0	0	69,970	129	6,031,676	6,183,633	51,000
* Calcium cyanamide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	6	6	0
	98o	0	0	0	0	0	0	130	130	0
	98n	No reports								
	99o	0	0	0	0	0	0	26	26	0
	99n	No reports								
	00o	0	0	0	0	0	0	43	43	0
	00n	No reports								
* Captan	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	5,070	0	0	0	9,834	1,072	7,479	23,455	0
	98o	2,697	0	0	0	9,000	3,944	11,297	26,938	0
	98n	0	0	0	0	68,416	0	140	68,556	0
	99o	2,314	0	0	0	9,000	17,910	9,922	39,146	0
	99n	0	0	0	0	66,081	0	27	66,108	0
	00o	1,947	0	0	0	9,000	6,418	8,240	25,605	0
	00n	0	0	0	0	78,768	111	0	78,879	0
* Carbaryl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	36,618	0	0	0	467,593	7,885	32,697	544,793	0
	98o	80,456	0	79,931	0	365,862	24,121	14,478	564,848	100
	98n	0	0	0	0	77,947	0	139	78,086	0
	99o	71,825	0	64	0	373,282	11,446	7,907	464,524	0
	99n	0	97	0	0	133,259	0	11,774	145,130	0
	00o	96,000	0	5	0	358,313	17,426	14,838	486,582	0
	00n	0	0	0	0	155,960	1,093	1	157,054	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA: not applicable (waste management data not required for 1988 reporting year)
NR: not reportable (chemicals added to the TRI list after 1988)
DC: definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
1563-66-2	*	Carbofuran	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	7	4,187	2	0	250	4,439	250	4,689
			98o	4	2,921	1	0	0	2,922	0	2,922
			98n	3	16	0	0	0	16	2	18
			99o	4	824	112	0	0	936	0	936
			99n	2	10	0	0	0	10	23	33
			00o	4	1,618	5	0	0	1,623	0	1,623
			00n	2	10	0	0	0	10	0	10
75-15-0	*	Carbon disulfide	88	88	124,109,904	39,501	13,400	43,436	124,206,241	58,473	124,264,714
			95	92	84,114,225	39,864	33,644	265	84,187,998	2,949	84,190,947
			98o	98	43,433,930	4,687	16,599	1,651	43,456,867	5,801	43,462,668
			98n	6	924	1	0	0	925	24	949
			99o	108	35,906,456	6,548	16,110	256	35,929,370	2,730	35,932,100
			99n	6	262	1	0	0	263	33	296
			00o	110	40,584,051	3,699	17,456	2,874	40,608,080	2,800	40,610,880
			00n	5	909	5	0	0	914	420	1,334
56-23-5	*,**	Carbon tetrachloride	88	95	3,795,248	15,627	98,050	14,759	3,923,684	49,703	3,973,387
			95	71	420,754	717	53,966	0	475,437	7,735	483,172
			98o	55	274,291	2,586	23,163	1,679	301,719	9,956	311,675
			98n	15	954	250	5	0	1,209	10,295	11,504
			99o	57	230,654	84	27,548	938	259,224	7,307	266,531
			99n	13	2,334	1	0	0	2,335	9,259	11,594
			00o	51	283,476	179	18,628	837	303,120	1,911	305,031
			00n	11	575	5	43,575	0	44,155	372	44,527
463-58-1		Carbonyl sulfide	88	38	25,954,103	0	0	0	25,954,103	0	25,954,103
			95	64	17,949,317	0	0	0	17,949,317	0	17,949,317
			98o	85	19,845,594	0	0	0	19,845,594	0	19,845,594
			98n	1	0	0	0	0	0	0	0
			99o	104	21,345,396	0	0	0	21,345,396	0	21,345,396
			99n	No reports							
			00o	106	21,939,968	0	0	0	21,939,968	0	21,939,968
			00n	No reports							
5234-68-4	*	Carboxin	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	8	0	0	0	8	428	436
			98o	3	5	0	0	0	5	17	22
			98n	No reports							
			99o	4	5	0	0	0	5	154	159
			99n	No reports							
			00o	4	4	0	0	0	4	118	122
			00n	No reports							
120-80-9	**	Catechol	88	113	3,789	320,546	0	84,332	408,667	89,474	498,141
			95	127	3,457	24,747	0	3,479	31,683	563	32,246
			98o	140	5,346	24,422	0	1,032	30,800	914	31,714
			98n	4	3	0	0	0	3	24	27
			99o	138	6,802	29,119	0	968	36,889	2,996	39,885
			99n	2	235	0	0	0	235	46	281
			00o	140	7,870	18,207	0	605	26,682	2,624	29,306
			00n	1	0	0	0	0	0	0	0

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR· not reportable (chemicals added to the TRI list after 1988)
DC. definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Carbofuran	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	1	3	47,158	5,422	52,584	1
	98o	0	0	0	0	3	35,601	2,922	38,526	275
	98n	0	0	0	0	243,290	0	15	243,305	0
	99o	0	0	0	0	0	19,615	14,111	33,726	0
	99n	0	0	0	0	162,525	0	25	162,550	0
	00o	38,200	0	0	0	38,200	34,376	1,073	111,849	0
	00n	0	0	0	0	68,769	166	1	68,936	0
* Carbon disulfide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	20,874,450	18	4,819,910	368,509	18,092,770	361,938	84,811,829	129,329,424	154,890
	98o	30,024,800	1,985	7,976,912	216,999	32,970,651	239,776	43,246,951	114,678,074	24,332
	98n	0	0	0	25,038	779,188	11,922	849	816,997	0
	99o	25,913,004	1,067	7,337,634	99,958	38,583,243	454,153	35,856,173	108,245,232	22,514
	99n	0	0	0	0	530,976	0	290	531,266	0
	00o	32,143,299	494	6,826,636	115,546	47,336,640	138,513	40,612,562	127,173,690	22,401
	00n	0	0	0	0	570,040	9,112	981	580,133	0
*,** Carbon tetrachloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	1,837,422	365,067	317,149	50,068	52,608,819	733,254	463,274	56,375,053	34,522
	98o	2,218,866	2,075,495	808,627	43,116	13,865,412	462,232	299,092	19,772,840	4,827
	98n	4,399	0	468,751	277,751	985,513	2,580,491	4,735	4,321,640	0
	99o	7,066,850	3,197,695	369,334	24,319	16,308,400	688,463	224,524	27,879,585	28,179
	99n	0	0	500,408	67,656	1,818,361	37,175	6,228	2,429,828	0
	00o	2,131,751	2,695,645	1,859,983	21,709	350,059,305	584,687	293,832	357,646,912	30,690
	00n	0	0	798,414	753	1,410,182	4,198	44,364	2,257,911	0
Carbonyl sulfide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	1,191,378	0	14,572,854	16,000	18,793,662	34,573,894	1
	98o	0	0	1,786,678	0	18,891,421	0	19,997,099	40,675,198	2
	98n	0	0	0	0	0	0	0	0	0
	99o	0	0	2,858,145	0	77,887,924	0	21,523,998	102,270,067	5,711
	99n	No reports								
	00o	0	0	2,495,008	0	81,436,026	0	22,092,792	106,023,826	5,580
	00n	No reports								
* Carboxin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	2,817	0	0	0	0	402	436	3,655	0
	98o	1,110	0	0	0	0	218	22	1,350	0
	98n	No reports								
	99o	1,538	0	0	0	0	60	159	1,757	0
	99n	No reports								
	00o	1,162	0	0	0	0	596	120	1,878	0
	00n	No reports								
** Catechol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	7,145,990	94,995	1,481,057	54,221	68,220	8,844,483	2,772
	98o	0	0	9,717,608	117,794	4,437,794	50,640	35,112	14,358,948	0
	98n	0	0	3,384	0	9,997	0	27	13,408	0
	99o	0	4,594	10,920,586	114,131	3,849,537	79,492	82,683	15,051,023	1
	99n	0	0	0	25,880	867	21,036	236	48,019	0
	00o	0	35,136	6,293,994	72,241	2,294,966	174,898	28,749	8,899,984	54
	00n	0	0	0	0	0	0	0	0	0

Note Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
2439-01-2	*	Chinomethionat	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
133-90-4	*	Chloramben	88	1	1,418	250	0	0	1,668	1,159	2,827
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
57-74-9	*,**	Chlordane	88	2	2,698	4	4,262	0	6,964	0	6,964
			95	1	823	22	0	0	845	0	845
			98o	No reports							
			98n	7	45	0	20,106	25,548	45,699	22	45,721
			99o	No reports							
			99n	4	8	1	0	0	9	40	49
		Not comparable	00o	3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		to prior years***	00n	18	13.70	0.00	0.00	8,947.74	8,961.44	828.59	9,790.03
115-28-6	**	Chlorendic acid	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	6	0	0	0	6	0	6
			98o	2	30	0	0	0	30	0	30
			98n	No reports							
			99o	2	32	0	0	0	32	0	32
			99n	No reports							
			00o	2	34	0	0	0	34	0	34
			00n	No reports							
90982-32-4	*	Chlorimuron ethyl	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	1	0	0	0	1	0	1
			98o	2	3	0	0	0	3	0	3
			98n	No reports							
			99o	2	27	0	0	0	27	0	27
			99n	No reports							
			00o	2	12	0	0	0	12	0	12
			00n	No reports							
7782-50-5	*	Chlorine	88	1,800	133,085,601	6,622,187	107,624	439,547	140,254,959	1,003,531	141,258,490
			95	1,381	65,736,426	442,215	74,124	13,095	66,265,860	12,286	66,278,146
			98o	1,197	59,615,387	252,747	81,637	56,122	60,005,893	27,260	60,033,153
			98n	152	73,691	168,797	27,639	154,480	424,607	3,000	427,607
			99o	1,117	48,998,400	341,525	75,710	55,320	49,470,955	7,745	49,478,700
			99n	133	206,861	63,090	0	55,359	325,310	59,367	384,677
			00o	1,062	45,483,946	264,000	167,321	216,220	46,131,487	15,949	46,147,436
			00n	133	114,188	17,508	0	55,443	187,139	36,919	224,058

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Chinomethionat	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
* Chloramben	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
*,** Chlordane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	5,150	95	845	6,090	0
	98o	No reports								
	98n	0	0	0	25,778	187,264	35	45,721	258,798	0
	99o	No reports								
	99n	0	0	0	0	470,719	114	46	470,879	0
Not comparable	00o	0.00	0.00	230 00	0.00	190.00	50.00	0.00	470.00	0.00
to prior years***	00n	0 00	0 00	0 00	0.00	812,132.92	5,636.05	9,010.26	826,779.23	0.00
** Chlorendic acid	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	488	6	494	0
	98o	0	0	0	0	0	567	30	597	0
	98n	No reports								
	99o	0	0	0	0	0	157	32	189	0
	99n	No reports								
	00o	0	0	0	0	0	691	34	725	0
	00n	No reports								
* Chlorimuron ethyl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	5,838	1	5,839	0
	98o	0	0	0	0	0	33,861	3	33,864	0
	98n	No reports								
	99o	0	0	0	0	0	11,885	27	11,912	0
	99n	No reports								
	00o	2,612	0	0	0	0	5,388	12	8,012	0
	00n	No reports								
* Chlorine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	84,986,469	1,791,968	499	1,467	219,882,098	1,178,309	66,257,554	374,098,364	13,336
	98o	71,480,719	88,349	0	50,291	249,338,970	943,223	60,040,270	381,941,822	9,263
	98n	760,238	0	0	0	4,537,933	26,089	405,113	5,729,373	578
	99o	68,617,968	83,825	2	60,645	211,832,099	730,444	49,433,429	330,758,412	20,526
	99n	3,029,901	0	0	0	3,730,760	87,594	340,448	7,188,703	42
	00o	187,785,135	20,685	14,176,058	3,984	744,341,490	779,057	46,066,960	993,173,369	4,443
	00n	3,907,523	0	0	0	4,290,180	0	187,438	8,385,141	261

Note Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
10049-04-4	*	Chlorine dioxide	88	122	12,251,050	2,350	0	41,000	12,294,400	41,750	12,336,150
			95	127	1,305,279	5	0	0	1,305,284	0	1,305,284
			98o	118	1,005,717	71	0	0	1,005,788	0	1,005,788
			98n	4	13,000	510	0	0	13,510	0	13,510
			99o	114	968,851	109	0	5	968,965	0	968,965
			99n	4	5,200	764	0	0	5,964	0	5,964
			00o	112	739,315	277,747	0	0	1,017,062	0	1,017,062
			00n	5	3,700	584	0	0	4,284	0	4,284
79-11-8	*	Chloroacetic acid	88	37	26,819	850	10	0	27,679	2,506	30,185
			95	31	6,474	16	0	0	6,490	600	7,090
			98o	25	3,585	16	0	0	3,601	500	4,101
			98n	1	0	0	0	0	0	0	0
			99o	21	4,565	17	0	0	4,582	328	4,910
			99n	No reports							
			00o	23	3,183	17	0	300	3,500	250	3,750
			00n	No reports							
532-27-4	*	2-Chloroaceto-phenone	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
4080-31-3	*	1-(3-Chloroallyl)-3,5,7-triaza-1-azonia-adamantane chloride	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	7	93	10	0	521	624	2,514	3,138
			98o	16	437	11	0	653	1,101	5,138	6,239
			98n	No reports							
			99o	12	217	11	0	509	737	5,769	6,506
			99n	No reports							
			00o	13	107	10	0	349	466	14,240	14,706
			00n	No reports							
106-47-8	*,**	p-Chloroaniline	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	4	267	827	0	0	1,094	11	1,105
			98o	4	6,181	12	0	0	6,193	0	6,193
			98n	1	20	0	0	0	20	0	20
			99o	4	131	337	0	0	468	0	468
			99n	1	1	0	0	0	1	0	1
			00o	5	442	60	0	0	502	5	507
			00n	2	4	0	0	0	4	0	4
108-90-7	*	Chlorobenzene	88	66	4,375,887	98,354	84,457	4,127	4,562,825	117,624	4,680,449
			95	62	1,132,073	1,850	27,405	5	1,161,333	92,582	1,253,915
			98o	75	774,102	662	184,106	16	958,886	19,763	978,649
			98n	18	1,130	250	250	0	1,630	1,870	3,500
			99o	75	675,741	1,433	113,526	214	790,914	16,217	807,131
			99n	17	2,149	1	62,018	0	64,168	15,448	79,616
			00o	72	695,311	469	80,008	1,206	776,994	16,115	793,109
			00n	18	2,850	5	137,859	0	140,714	1,468	142,182

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*	Chlorine dioxide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	2,484,920	0	0	0	40,571,008	0	1,326,713	44,382,641	3,932
		98o	2,725,788	0	0	0	48,701,526	6,000	1,050,006	52,483,320	860
		98n	0	0	0	0	0	0	13,510	13,510	0
		99o	722,759	0	0	0	48,746,241	0	992,541	50,461,541	260
		99n	0	0	0	0	0	0	5,964	5,964	0
		00o	700,467	0	0	0	22,698,297	0	755,819	24,154,583	2,589
		00n	0	0	0	0	0	0	4,284	4,284	0
*	Chloroacetic acid	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	25,013	0	0	0	1,342,493	2,726	6,607	1,376,839	0
		98o	85,721	0	0	0	1,209,175	568	3,250	1,298,714	0
		98n	0	0	0	0	10,132	0	0	10,132	0
		99o	83,319	0	0	0	867,368	1,419	4,768	956,874	0
		99n	No reports								
		00o	46,315	0	63,818	0	1,137,587	1,933	3,182	1,252,835	0
		00n	No reports								
*	2-Chloroaceto-phenone	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
*	1-(3-Chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	2,700	0	0	0	720	4,700	3,570	11,690	0
		98o	78,111	0	0	0	2,310	12,150	6,753	99,324	0
		98n	No reports								
		99o	31,211	0	0	0	1,834	331,049	6,541	370,635	0
		99n	No reports								
		00o	26,419	0	0	0	1,414	28,161	16,153	72,147	0
		00n	No reports								
*,**	p-Chloroaniline	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	540	0	120,301	940	121,781	0
		98o	0	0	46,000	520	0	6,424	16,097	69,041	0
		98n	0	0	0	0	25,861	0	20	25,881	0
		99o	0	0	570,000	1,372	1,112	7,396	471	580,351	0
		99n	0	0	0	0	17,936	0	1	17,937	0
		00o	0	0	74,005	910	1,984	10,947	499	88,345	0
		00n	0	0	0	54,903	17,936	0	4	72,843	0
*	Chlorobenzene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	9,123,869	1,016,982	2,099,757	1,366,145	11,231,684	1,503,368	1,242,678	27,584,483	20,610
		98o	1,107,325	976,071	5,490,480	3,476,264	10,333,365	4,804,121	983,806	27,171,432	831
		98n	260,432	0	20,907	81,425	1,819,899	1,302	2,040	2,186,005	0
		99o	4,394,439	6,186,066	4,355,424	1,518,569	6,283,038	1,640,671	784,133	25,162,340	16,456
		99n	443,673	0	8,156	287,236	2,576,220	1,174	64,394	3,380,853	10
		00o	2,002,240	958,087	4,696,214	1,995,214	9,704,530	1,233,084	789,731	21,379,100	144
		00n	516,228	16,013	3,046	127,276	1,989,903	20,239	140,622	2,813,327	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR: not reportable (chemicals added to the TRI list after 1988)
DC: definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
510-15-6	*	Chlorobenzilate	88	No reports							
			95	No reports							
			98o	No reports							
			98n	1	0	0	0	0	0	0	0
			99o	No reports							
			99n	1	2	1	0	0	3	10	13
			00o	No reports							
			00n	2	0	0	0	0	0	0	0
75-68-3		1-Chloro-1,1-di-fluoroethane (HCFC-142b)	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	25	6,954,443	771	6	0	6,955,220	21,600	6,976,820
			98o	28	5,529,844	40	0	0	5,529,884	4,979	5,534,863
			98n	3	11	0	0	0	11	614	625
			99o	29	5,644,136	44	0	0	5,644,180	4,989	5,649,169
			99n	6	24	0	0	0	24	119	143
			00o	28	5,654,557	34	0	0	5,654,591	4,688	5,659,279
			00n	2	10	0	0	0	10	5	15
75-45-6	*	Chlorodifluoro-methane (HCFC-22)	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	245	12,625,766	2,279	22	1	12,628,068	55,084	12,683,152
			98o	247	9,115,189	3,652	0	1	9,118,842	51,648	9,170,490
			98n	1	64,602	0	0	0	64,602	0	64,602
			99o	256	8,485,338	3,652	0	1	8,488,991	67,799	8,556,790
			99n	5	108,930	0	0	0	108,930	0	108,930
			00o	253	8,507,831	2,891	0	1	8,510,723	57,125	8,567,848
			00n	3	103,249	0	0	0	103,249	0	103,249
75-00-3		Chloroethane	88	50	4,907,292	27,448	1,510	1	4,936,251	32,260	4,968,511
			95	55	2,890,354	2,320	0	116	2,892,790	4,400	2,897,190
			98o	59	2,198,423	1,024	67	50	2,199,564	3,900	2,203,464
			98n	2	16	0	0	0	16	3	19
			99o	56	2,134,114	261	130	0	2,134,505	2,309	2,136,814
			99n	No reports							
			00o	59	2,067,847	693	110	0	2,068,650	34,649	2,103,299
			00n	1	0	0	0	0	0	0	0
67-66-3	*,**	Chloroform	88	169	25,988,609	1,114,965	36,000	68,647	27,208,221	143,124	27,351,345
			95	163	10,437,331	332,473	33,276	4,297	10,807,377	6,647	10,814,024
			98o	140	6,289,554	127,314	44,102	12,349	6,473,319	42,857	6,516,176
			98n	20	1,731	5	5	0	1,741	3,221	4,962
			99o	132	5,261,703	86,238	59,399	11,776	5,419,116	32,532	5,451,648
			99n	22	3,231	1	64,297	0	67,529	59,348	126,877
			00o	113	3,442,205	56,331	42,926	12,648	3,554,110	9,254	3,563,364
			00n	19	2,096	10	183,816	1,131	187,053	2,016	189,069
74-87-3	*	Chloromethane	88	81	11,567,647	115,985	165,250	0	11,848,882	59,140	11,908,022
			95	111	4,394,877	57,430	50,198	35	4,502,540	1,557	4,504,097
			98o	103	2,652,015	1,747	294,101	62	2,947,925	952	2,948,877
			98n	9	2,812	0	0	0	2,812	7	2,819
			99o	99	2,777,228	2,159	158,680	53	2,938,120	2,194	2,940,314
			99n	11	1,150	0	0	8,228	9,378	4,456	13,834
			00o	96	1,909,293	1,177	164,490	135	2,075,095	1,287	2,076,382
			00n	13	1,630	10	5	1,097	2,742	8,326	11,068

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Chlorobenzilate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	0	0	0	0	0	0	0	0	0
	99o	No reports								
	99n	0	0	0	0	41,000	0	9	41,009	0
	00o	No reports								
	00n	0	0	0	0	16,838	871	0	17,709	0
1-Chloro-1,1-di-fluoroethane (HCFC-142b)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	52,560	0	0	320	304,070	26,330	6,933,797	7,317,077	459
	98o	67	0	0	5,400	534,586	165,589	5,537,482	6,243,124	102
	98n	0	0	0	0	136,697	0	625	137,322	0
	99o	12,089,067	0	0	142,321	537,217	190,798	5,577,057	18,536,460	12
	99n	0	0	0	0	591,193	0	124	591,317	0
	00o	48,356,067	0	0	101,208	829,773	142,684	5,671,808	55,101,540	3,815
	00n	0	0	0	0	459,866	0	7	459,873	0
* Chlorodifluoro-methane (HCFC-22)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	2,374,126	242,386	0	27,002	401,771	258,992	12,514,538	15,818,815	196,353
	98o	698,765	168,042	0	237	505,214	291,198	9,265,296	10,928,752	125,554
	98n	0	0	0	0	0	0	63,090	63,090	1,512
	99o	867,732	472,424	0	2,422	346,748	203,402	8,578,738	10,471,466	28,168
	99n	3	0	0	0	12,715	1,114	108,966	122,798	0
	00o	1,159,592	504,028	0	1,884	549,878	741,991	8,581,260	11,538,633	98,148
	00n	0	0	0	0	0	1,088	98,257	99,345	4,800
Chloroethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	2,321,094	155,726	13,500,359	45,855	28,074,197	492,722	2,896,879	47,486,832	8,570
	98o	5,135,802	170,083	11,263,574	17,934	35,499,891	337,212	2,206,187	54,630,683	134
	98n	0	0	0	0	48,025	14	15	48,054	0
	99o	535,427	429,824	22,516,043	119,801	28,690,272	504,451	2,135,609	54,931,427	1,400
	99n	No reports								
	00o	485,765	260,018	37,990,489	238,935	22,965,104	475,183	2,072,145	64,487,639	543
	00n	0	0	0	0	0	0	0	0	0
*,** Chloroform	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	5,138,816	175,713	17,199,219	103,558	17,287,361	2,062,169	10,772,048	52,738,884	27,205
	98o	6,749,489	1,871,565	5,133,726	164,858	16,257,850	1,722,215	6,485,048	38,384,751	21,622
	98n	35,795	0	1,650	297,085	1,473,283	2,406,427	3,118	4,217,358	3
	99o	8,936,153	2,756,665	1,606,655	89,563	25,581,243	2,025,068	5,395,469	46,390,816	51,610
	99n	222,080	0	18,133	468,149	2,136,199	187,350	70,520	3,102,431	53
	00o	8,150,949	2,017,857	3,803,728	108,108	129,143,891	1,944,730	3,494,064	148,663,326	32,260
	00n	101,459	0	0	196,256	2,760,021	71,314	186,013	3,315,063	136
* Chloromethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	2,803,788	650	4,517,896	4,505	14,364,776	240,406	4,522,298	26,454,319	7,916
	98o	3,447,064	23,740	4,341,426	17,950	8,368,825	292,447	2,933,141	19,424,593	12,001
	98n	0	0	0	0	342,535	1,997,213	2,861	2,342,609	0
	99o	3,323,864	1	5,274,618	2,063	13,727,873	234,595	2,937,142	25,500,156	2,715
	99n	0	0	0	0	363,375	0	13,928	377,303	33,695
	00o	2,485,615	0	5,631,223	57,198	118,166,414	119,666	2,066,517	128,526,633	8,398
	00n	14,710	0	79	12,780	313,947	1,204	1,466	344,186	0

Note. Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
107-30-2	**	Chloromethyl methyl ether	88	4	3,033	0	0	0	3,033	0	3,033
			95	3	2,865	10	0	0	2,875	70	2,945
			98o	2	1,000	0	0	0	1,000	0	1,000
			98n	1	0	0	0	0	0	0	0
			99o	2	1,300	0	0	0	1,300	0	1,300
			99n	3	70	1	0	0	71	169	240
			00o	1	1,350	0	0	0	1,350	0	1,350
			00n	3	0	0	0	0	0	0	0
563-47-3	**	3-Chloro-2-methyl-1-propene	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	19,859	0	0	0	19,859	0	19,859
			98o	3	7,353	0	0	0	7,353	0	7,353
			98n	No reports							
			99o	4	8,716	0	0	0	8,716	0	8,716
			99n	No reports							
			00o	3	8,540	0	0	0	8,540	0	8,540
			00n	No reports							
--	**	Chlorophenols	88	9	2,573	272	71,554	0	74,399	2	74,401
			95	9	4,997	30	105,687	0	110,714	958	111,672
			98o	6	4,864	36	73,548	0	78,448	8,013	86,461
			98n	5	16	0	0	0	16	4,175	4,191
			99o	8	3,519	75	59,159	2	62,755	3,339	66,094
			99n	3	1	0	0	0	1	285	286
			00o	6	604	100	31,593	1	32,298	1,816	34,114
			00n	2	2	0	0	0	2	0	2
104-12-1		p-Chlorophenyl isocyanate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
76-06-2	*	Chloropicrin	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	15	11,472	0	0	0	11,472	36	11,508
			98o	16	7,560	0	0	0	7,560	270	7,830
			98n	1	4	0	0	0	4	0	4
			99o	15	6,647	0	0	0	6,647	1	6,648
			99n	1	4	0	0	0	4	0	4
			00o	13	7,647	0	0	0	7,647	0	7,647
			00n	1	3	0	0	0	3	0	3
126-99-8	**	Chloroprene	88	13	1,948,008	287	68,792	0	2,017,087	0	2,017,087
			95	15	983,932	0	60,000	5,104	1,049,036	7,102	1,056,138
			98o	13	977,770	0	100,000	0	1,077,770	0	1,077,770
			98n	2	528	0	0	0	528	1	529
			99o	10	906,891	0	29,000	0	935,891	0	935,891
			99n	1	255	0	0	0	255	0	255
			00o	14	974,421	0	47,000	0	1,021,421	0	1,021,421
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information) Chloroprene meets OSHA carcinogen standard effective for the 2001 reporting year

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
** Chloromethyl methyl ether	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	15,900	0	2,909	18,809	0
	98o	0	0	0	0	280	0	1,000	1,280	0
	98n	0	0	0	0	0	0	0	0	0
	99o	0	0	0	0	1,600	0	1,300	2,900	0
	99n	0	0	0	0	163,369	0	235	163,604	0
	00o	0	0	0	0	0	0	1,350	1,350	0
	00n	0	0	0	0	100,342	780	0	101,122	0
** 3-Chloro-2-methyl-1-propene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	544,134	14,819	19,859	578,812	10
	98o	0	0	0	0	637,973	344	7,353	645,670	0
	98n	No reports								
	99o	0	0	0	0	550,770	16,664	8,525	575,959	0
	99n	No reports								
	00o	0	0	0	0	538,391	7,504	8,329	554,224	0
	00n	No reports								
** Chlorophenols	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	2,919,075	0	0	6,400	237,484	26,212	109,865	3,299,036	1,776
	98o	2,737,000	0	0	0	297,377	7,807	85,733	3,127,917	725
	98n	0	0	1,009	62,967	281,511	9,645	3,940	359,072	0
	99o	2,148,700	0	0	0	1,740,690	3,639	65,024	3,958,053	1,070
	99n	0	0	2,837	78,708	188,731	71	286	270,633	0
	00o	1,838,000	0	0	0	167,000	3,251	32,956	2,041,207	858
	00n	0	0	2,456	2,991	200,336	283	2	206,068	0
p-Chlorophenyl isocyanate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
* Chloropicrin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	9,981	632	0	54	441	34,524	10,677	56,309	0
	98o	2,250	1,064	0	0	1,110	483	7,544	12,451	0
	98n	0	0	0	0	0	0	4	4	0
	99o	2,206	914	0	0	4,233	412	6,647	14,412	10
	99n	0	0	0	0	0	0	4	4	0
	00o	2,112	0	0	905	4,620	942	7,647	16,226	0
	00n	0	0	0	0	0	0	3	3	0
** Chloroprene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	480,972	466,280	9,105	4,233,572	138,421	1,051,019	6,379,369	515
	98o	0	306,514	2,500,000	66,206	8,860,286	209,184	1,077,774	13,019,964	10
	98n	0	0	0	13,385	102,414	173	299	116,271	0
	99o	0	584,238	1,945,200	798	8,671,014	115,522	935,889	12,252,661	0
	99n	0	0	0	0	102,743	0	15	102,758	0
	00o	7,264	642,816	1,959,118	29,272	5,818,742	59,694	1,021,419	9,538,325	0
	00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information) Chloroprene meets OSHA carcinogen standard effective for the 2001 reporting year

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number	Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
542-76-7	3-Chloropro-pionitrile	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	No reports							
		98o	No reports							
		98n	No reports							
		99o	No reports							
		99n	2	4	0	0	0	4	153	157
		00o	No reports							
		00n	1	0	0	0	0	0	0	0
63938-10-3	Chlorotetrafluoro-ethane	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	No reports							
		98o	No reports							
		98n	1	0	0	0	0	0	0	0
		99o	1	129,800	0	0	0	129,800	0	129,800
		99n	1	0	0	0	0	0	0	0
		00o	1	40,043	0	0	0	40,043	0	40,043
		00n	No reports							
354-25-6	1-Chloro-1,1,2,2-tetrafluoroethane (HCFC-124a)	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	4	504,553	0	0	0	504,553	0	504,553
		98o	3	23,336	0	0	0	23,336	0	23,336
		98n	No reports							
		99o	3	59,525	0	0	0	59,525	0	59,525
		99n	No reports							
		00o	4	48,929	0	0	0	48,929	0	48,929
		00n	No reports							
2837-89-0	2-Chloro-1,1,1,2-tetrafluoroethane (HCFC-124)	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	11	752,215	1,255	0	0	753,470	0	753,470
		98o	23	750,474	5	0	0	750,479	0	750,479
		98n	1	852	0	0	0	852	0	852
		99o	22	599,721	5	0	0	599,726	0	599,726
		99n	1	4,651	0	0	0	4,651	0	4,651
		00o	22	580,038	5	0	0	580,043	0	580,043
		00n	1	375	0	0	0	375	0	375
1897-45-6	*,** Chlorothalonil	88	10	28,476	250	0	0	28,726	396,274	425,000
		95	25	7,440	35	0	750	8,225	97,420	105,645
		98o	25	9,236	35	0	0	9,271	301,801	311,072
		98n	1	0	0	5	32,000	32,005	5	32,010
		99o	19	5,106	7	0	0	5,113	280,116	285,229
		99n	1	0	0	0	0	0	0	0
		00o	20	4,882	44	0	0	4,926	201,402	206,328
		00n	No reports							
95-69-2	** p-Chloro-o-toluidine	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	No reports							
		98o	No reports							
		98n	No reports							
		99o	No reports							
		99n	No reports							
		00o	No reports							
		00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
3-Chloropropionitrile	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	0	0	0	0	106,854	0	157	107,011	0
	00o	No reports								
	00n	0	0	0	0	55,812	0	0	55,812	0
Chlorotetrafluoroethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	0	0	0	0	29,571	0	0	29,571	0
	99o	0	0	0	0	0	0	129,800	129,800	0
	99n	0	0	0	0	47,355	0	0	47,355	0
	00o	0	0	0	0	0	0	40,043	40,043	0
	00n	No reports								
1-Chloro-1,1,2,2-tetrafluoroethane (HCFC-124a)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	1,725	0	504,011	505,736	0
	98o	0	0	0	0	165,890	0	23,136	189,026	0
	98n	No reports								
	99o	0	0	0	0	457,049	0	59,325	516,374	0
	99n	No reports								
	00o	0	0	0	0	680,013	0	48,729	728,742	0
	00n	No reports								
2-Chloro-1,1,1,2-tetrafluoroethane (HCFC-124)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	239,200	0	0	193,194	35,816	753,296	1,221,506	400
	98o	44,530	282,345	0	0	501,437	0	749,963	1,578,275	30
	98n	0	0	0	0	0	0	852	852	0
	99o	110,249	246,089	0	0	263,090	1,085	599,669	1,220,182	40
	99n	0	0	0	0	0	0	4,651	4,651	0
	00o	135,092	346,497	0	0	445,998	0	580,278	1,507,865	371
	00n	0	0	0	0	0	0	375	375	0
*,** Chlorothalonil	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	5,339	0	0	2,294	24,716	139,966	102,279	274,594	1
	98o	4,726	0	0	0	65,406	195,241	311,120	576,493	419
	98n	0	0	0	0	0	0	32,000	32,000	0
	99o	25,082	0	0	0	63,840	149,720	285,866	524,508	1,614
	99n	0	0	0	0	14,075	0	0	14,075	0
	00o	15,267	0	0	0	44,246	114,543	206,322	380,378	24
	00n	No reports								
** p-Chloro-o-toluidine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC· definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number	Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
75-88-7	2-Chloro-1,1,1-trifluoroethane (HCFC-133a)	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	2	35,523	0	0	0	35,523	0	35,523
		98o	4	162,775	52	0	0	162,827	0	162,827
		98n	No reports							
		99o	3	23,950	30	0	0	23,980	0	23,980
		99n	No reports							
		00o	3	77,750	0	0	0	77,750	0	77,750
		00n	No reports							
75-72-9	Chlorotrifluoromethane (CFC-13)	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	1	250	0	0	0	250	0	250
		98o	1	14,700	5	0	0	14,705	0	14,705
		98n	No reports							
		99o	2	10,790	5	0	0	10,795	0	10,795
		99n	No reports							
		00o	3	17,101	5	0	0	17,106	0	17,106
		00n	No reports							
460-35-5	3-Chloro-1,1,1-trifluoropropane (HCFC-253fb)	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	No reports							
		98o	No reports							
		98n	No reports							
		99o	No reports							
		99n	No reports							
		00o	No reports							
		00n	No reports							
5598-13-0 *	Chlorpyrifos methyl	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	4	510	0	0	6,000	6,510	0	6,510
		98o	5	500	0	0	0	500	0	500
		98n	No reports							
		99o	4	10	0	0	0	10	24,197	24,207
		99n	No reports							
		00o	4	10	0	0	0	10	80,821	80,831
		00n	No reports							
64902-72-3 *	Chlorsulfuron	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	1	1	0	0	0	1	0	1
		98o	1	1	0	0	0	1	0	1
		98n	No reports							
		99o	1	1	0	0	0	1	0	1
		99n	No reports							
		00o	1	1	0	0	0	1	0	1
		00n	No reports							
7440-47-3	Chromium	88	1,258	566,248	75,442	2,249	9,282,761	9,926,700	11,710,612	21,637,312
		95	2,015	417,700	17,281	33	1,110,708	1,545,722	5,759,759	7,305,481
		98o	2,015	704,350	13,122	9	710,336	1,427,816	12,817,976	14,245,792
		98n	58	7,400	25,220	260,448	14,863,233	15,156,301	1,646,572	16,802,873
		99o	2,041	664,513	11,257	56	842,996	1,518,822	15,420,066	16,938,888
		99n	57	3,879	20,333	38,250	10,605,111	10,667,573	1,589,358	12,256,931
		00o	2,039	511,321	12,548	348	538,854	1,063,070	7,123,328	8,186,397
		00n	48	2,098	1,317	0	5,814,589	5,818,004	1,111,007	6,929,011

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR: not reportable (chemicals added to the TRI list after 1988)
DC: definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
2-Chloro-1,1,1-trifluoroethane (HCFC-133a)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	35,608	35,608	0
	98o	0	0	0	0	33,000	0	162,925	195,925	4
	98n	No reports								
	99o	0	0	0	0	250,000	0	23,700	273,700	0
	99n	No reports								
	00o	0	0	0	0	310,000	3,600	77,500	391,100	0
	00n	No reports								
Chlorotrifluoromethane (CFC-13)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	30	30	0
	98o	0	0	0	0	0	0	14,705	14,705	0
	98n	No reports								
	99o	0	33,339	0	0	0	0	10,795	44,134	0
	99n	No reports								
	00o	0	18,000	0	0	57,159	0	17,106	92,265	0
	00n	No reports								
3-Chloro-1,1,1-trifluoropropane (HCFC-253fb)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
* Chlorpyrifos methyl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	400	0	0	0	0	6,095	6,402	12,897	0
	98o	2,000	0	0	0	0	4,990	285	7,275	0
	98n	No reports								
	99o	4,000	0	0	0	0	0	8	4,008	0
	99n	No reports								
	00o	4,000	0	0	0	0	0	80,824	84,824	0
	00n	No reports								
* Chlorsulfuron	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	3,444	1	3,445	0
	98o	0	0	0	0	0	10,508	1	10,509	0
	98n	No reports								
	99o	0	0	0	0	0	2,221	1	2,222	0
	99n	No reports								
	00o	0	0	0	0	0	4,078	1	4,079	0
	00n	No reports								
Chromium	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	29,843,000	103,514,591	9,781,278	51,737	366,372	1,619,348	8,188,477	153,364,803	41,365
	98o	88,171,850	91,138,645	86,318	17,198	775,425	1,194,264	13,514,849	194,898,549	55,099
	98n	0	141,529	0	0	59,920	48,806	16,443,427	16,693,682	0
	99o	27,731,626	91,048,077	0	1,555	466,434	869,733	12,590,574	132,707,999	3,888,688
	99n	1,524	383,454	0	0	1,977	187,876	11,579,546	12,154,377	10
	00o	23,223,999	86,579,219	376,580	20	97,402	518,497	8,126,272	118,921,990	48,915
	00n	0	89,457	0	0	80,135	273,239	6,813,043	7,255,874	22,823

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR. not reportable (chemicals added to the TRI list after 1988)
DC: definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
--	**	Chromium compounds	88	1,216	764,851	326,027	52,653	30,938,106	32,081,637	14,898,726	46,980,363
			95	1,484	649,921	138,542	1,084,747	22,125,565	23,998,775	20,434,248	44,433,023
			98o	1,520	326,248	112,857	874,795	30,789,883	32,103,783	13,905,851	46,009,633
			98n	324	305,574	114,397	667,755	61,655,724	62,743,450	5,771,167	68,514,617
			99o	1,500	471,172	97,948	816,717	30,372,979	31,758,816	12,082,844	43,841,660
			99n	313	275,674	97,210	728,700	123,325,647	124,427,231	5,186,983	129,614,214
			00o	1,537	424,116	116,272	1,442,625	13,552,324	15,535,337	14,361,305	29,896,642
			00n	322	316,331	111,159	2,060,250	110,528,366	113,016,106	5,267,961	118,284,067
4680-78-8		C.I Acid Green 3	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
6459-94-5	**	C.I. Acid Red 114	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							
569-64-2	*	C I Basic Green 4	88	6	750	0	0	0	750	250	1,000
			95	2	5	0	0	0	5	0	5
			98o	3	5	0	0	0	5	750	755
			98n	1	0	0	0	0	0	0	0
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	No reports							
			00n	1	0	0	0	0	0	0	0
989-38-8		C.I. Basic Red 1	88	No reports							
			95	2	0	0	0	0	0	668	668
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	2	0	0	0	0	0	0	0
			99n	No reports							
			00o	2	0	0	0	0	0	0	0
			00n	No reports							
1937-37-7	**	C.I. Direct Black 38	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR: not reportable (chemicals added to the TRI list after 1988)
DC: definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen (see Appendix C for more information) For Chromium compounds, applies only to Chromium (VI) compounds

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

	Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
**	Chromium compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	36,079,630	45,257,456	44,280	60,191	94,217,654	3,492,760	40,311,777	219,463,748	1,658,922
		98o	37,417,665	32,859,887	10,015	33,545	1,224,912	2,604,536	45,079,084	119,229,644	183,157
		98n	54,967	903,957	0	22,002	133,506	326,055	68,414,590	69,855,077	2,817
		99o	27,143,535	35,102,921	2,000	64,839	8,937,328	1,296,818	44,542,912	117,090,353	1,444,472
		99n	14,487	1,696,117	0	0	91,982	197,683	86,403,849	88,404,118	43,000,490
		00o	20,254,408	31,871,276	6,819	22,274	10,716,983	1,155,818	31,210,209	95,237,787	271,418
		00n	172,697	1,137,487	0	12,000	198,832	416,507	99,515,640	101,453,163	19,000,023
	C.I Acid Green 3	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
**	C.I. Acid Red 114	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	0	0	0
		98o	0	0	0	0	0	0	0	0	0
		98n	No reports								
		99o	0	0	0	0	0	0	0	0	0
		99n	No reports								
		00o	0	0	0	0	0	0	0	0	0
		00n	No reports								
*	C I Basic Green 4	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	110	499	10	619	0
		98o	0	0	0	0	0	998	20	1,018	0
		98n	0	0	0	0	0	0	0	0	0
		99o	0	0	0	0	0	0	0	0	0
		99n	No reports								
		00o	No reports								
		00n	0	0	0	0	0	0	0	0	0
	C.I. Basic Red 1	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	54	0	289	668	1,011	0
		98o	0	0	0	0	0	0	0	0	0
		98n	No reports								
		99o	0	0	0	0	0	0	0	0	0
		99n	No reports								
		00o	0	0	0	0	0	0	0	0	0
		00n	No reports								
**	C I Direct Black 38	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								

Note· Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen (see Appendix C for more information) For Chromium compounds, applies only to Chromium (VI) compounds

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number	Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
28407-37-6	C.I. Direct Blue 218	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	6	10	6	0	0	16	1,400	1,416
		98o	6	0	10	0	5	15	2,142	2,157
		98n	No reports							
		99o	8	0	10	0	0	10	2,259	2,269
		99n	No reports							
		00o	8	0	20	0	1,704	1,724	3,848	5,572
		00n	No reports							
2602-46-2 **	C.I. Direct Blue 6	88	No reports							
		95	No reports							
		98o	No reports							
		98n	No reports							
		99o	No reports							
		99n	No reports							
		00o	No reports							
		00n	No reports							
16071-86-6 **	C.I. Direct Brown 95	88	No reports							
		95	1	0	0	0	0	0	0	0
		98o	No reports							
		98n	No reports							
		99o	No reports							
		99n	No reports							
		00o	No reports							
		00n	No reports							
2832-40-8	C.I. Disperse Yellow 3	88	1	398	302	0	0	700	899	1,599
		95	3	450	27	0	0	477	1,061	1,538
		98o	3	205	25	0	0	230	876	1,106
		98n	No reports							
		99o	3	50	25	0	0	75	900	975
		99n	No reports							
		00o	3	31	25	0	0	56	450	506
		00n	No reports							
3761-53-3 **	C.I. Food Red 5	88	No reports							
		95	No reports							
		98o	No reports							
		98n	No reports							
		99o	No reports							
		99n	No reports							
		00o	No reports							
		00n	No reports							
81-88-9	C I. Food Red 15	88	2	250	0	0	0	250	0	250
		95	2	0	0	0	0	0	0	0
		98o	2	0	0	0	0	0	0	0
		98n	No reports							
		99o	3	0	0	0	0	0	0	0
		99n	No reports							
		00o	3	0	0	0	0	0	0	0
		00n	1	0	0	0	23,886	23,886	0	23,886

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
C.I. Direct Blue 218	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	5	0	0	0	619	5,151	1,411	7,186	0
	98o	0	260	0	0	312	1,417	2,144	4,133	0
	98n	No reports								
	99o	0	450	0	0	53	1,622	2,262	4,387	0
	99n	No reports								
	00o	0	1,100	0	0	13,326	1,984	2,249	18,659	0
	00n	No reports								
** C I Direct Blue 6	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
** C.I. Direct Brown 95	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
C.I Disperse Yellow 3	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	1,061	5,189	1,410	7,660	0
	98o	0	0	0	0	0	1,882	1,106	2,988	0
	98n	No reports								
	99o	0	0	0	0	0	0	950	950	0
	99n	No reports								
	00o	0	0	0	0	0	0	506	506	0
	00n	No reports								
** C.I. Food Red 5	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
C I. Food Red 15	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	0	0	0	0	0	0	0	0	0
	99n	No reports								
	00o	0	0	0	0	0	0	0	0	0
	00n	0	0	0	0	0	0	23,886	23,886	0

Note. Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
3118-97-6		C.I. Solvent Orange 7	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	No reports							
			00n	No reports							
97-56-3	**	C.I. Solvent Yellow 3	88	1	250	0	0	0	250	0	250
			95	1	0	0	0	0	0	0	0
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							
842-07-9		C.I. Solvent Yellow 14	88	2	0	0	0	0	0	0	0
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
492-80-8	*,**	C.I Solvent Yellow 34	88	No reports							
			95	No reports							
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	2	5	0	0	0	5	157	162
			00o	1	0	0	0	0	0	0	0
			00n	2	0	0	0	0	0	0	0
128-66-5		C.I. Vat Yellow 4	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
7440-48-4	**	Cobalt	88	178	44,038	16,744	0	213,204	273,986	248,089	522,075
			95	262	51,257	17,070	0	46,487	114,814	228,188	343,002
			98o	269	40,535	3,597	0	85,063	129,195	414,201	543,396
			98n	6	280	7	0	133,731	134,018	17,870	151,888
			99o	252	24,723	5,600	0	5,803	36,126	319,785	355,911
			99n	5	27	0	0	83,115	83,142	5	83,147
			00o	276	31,294	3,963	2	7,963	43,222	355,832	399,054
			00n	4	13	0	0	52,160	52,173	8	52,181

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR: not reportable (chemicals added to the TRI list after 1988)
DC: definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
C.I. Solvent Orange 7	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	0	0	0	0	0	0	0	0	0
	99n	No reports								
	00o	No reports								
	00n	No reports								
** C I Solvent Yellow 3	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	0	0	0	0	0	0	0	0	0
	99n	No reports								
	00o	0	0	0	0	0	0	0	0	0
	00n	No reports								
C.I. Solvent Yellow 14	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
*,**C.I Solvent Yellow 34	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	0	0	0	0	0	0	0	0	0
	99n	0	0	0	0	129,504	0	162	129,666	0
	00o	0	0	0	0	0	0	0	0	0
	00n	0	0	0	0	107,973	787	0	108,760	0
C.I. Vat Yellow 4	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
** Cobalt	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	3,981,408	12,452,691	0	1	379,265	85,327	256,695	17,155,387	0
	98o	4,249,702	7,598,271	0	10,000	14,107	32,813	326,305	12,231,198	295
	98n	0	0	0	0	0	0	151,859	151,859	0
	99o	4,421,707	7,432,305	0	0	5,886	14,387	240,024	12,114,309	23
	99n	0	0	0	0	0	0	83,124	83,124	0
	00o	4,146,786	8,409,291	0	0	17,127	16,005	248,521	12,837,731	102
	00n	0	0	0	0	0	0	52,160	52,160	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
--	**	Cobalt compounds	88	150	56,410	63,662	18,500	38,960	177,532	300,641	478,173
			95	232	29,246	70,646	51,657	505,904	657,453	358,503	1,015,956
			98o	288	32,098	35,350	32,950	520,101	620,499	361,511	982,010
			98n	157	55,229	24,069	12,006	12,610,937	12,702,241	461,156	13,163,397
			99o	291	33,859	58,826	30,421	503,301	626,407	523,216	1,149,623
			99n	155	61,216	24,948	17,001	14,315,236	14,418,401	401,301	14,819,702
			00o	308	34,022	50,323	38,125	366,223	488,693	657,729	1,146,422
			00n	152	46,205	26,760	18,001	15,187,036	15,278,002	349,966	15,627,968
7440-50-8	*	Copper	88	1,978	1,524,812	116,919	15,646	10,466,155	12,123,532	17,234,052	29,357,584
			95	2,830	1,272,206	44,744	29,787	1,658,397	3,005,134	15,313,458	18,318,592
			98o	2,841	1,282,445	37,956	56,634	1,537,015	2,914,050	9,167,861	12,081,910
			98n	58	117,699	17,196	23,211	278,545,097	278,703,203	2,401,574	281,104,777
			99o	2,802	2,059,010	33,783	62,367	1,788,516	3,943,676	9,735,151	13,678,827
			99n	44	75,377	2,985	5	12,843,001	12,921,368	1,593,619	14,514,987
			00o	2,782	1,101,632	39,255	70,577	3,288,639	4,500,102	11,376,855	15,876,957
			00n	42	77,789	404	0	4,629,524	4,707,717	2,053,716	6,761,433
--		Copper compounds	88	1,047	3,159,242	185,292	165,957	29,683,607	33,194,098	14,135,121	47,329,219
			95	1,479	2,027,078	93,463	284,852	40,773,223	43,178,616	10,122,441	53,301,057
			98o	1,598	3,537,950	95,295	187,400	51,985,854	55,806,499	8,748,068	64,554,566
			98n	384	588,837	370,258	1,374,646	1,233,638,619	1,235,972,360	4,717,867	1,240,690,227
			99o	1,619	1,556,263	84,748	247,755	44,356,899	46,245,665	9,461,460	55,707,125
			99n	366	516,258	276,827	1,273,581	1,708,143,588	1,710,210,254	4,379,835	1,714,590,089
			00o	1,646	1,208,671	84,705	247,235	56,931,657	58,472,268	12,106,864	70,579,133
			00n	365	447,435	341,714	1,490,016	1,289,130,188	1,291,409,353	5,349,520	1,296,758,873
8001-58-9	*,**	Creosote	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	85	928,376	8,427	0	500	937,303	2,595,570	3,532,873
			98o	78	864,403	24,842	0	12,275	901,520	1,146,223	2,047,743
			98n	14	1,142	0	0	2,176,468	2,177,610	1,996	2,179,606
			99o	75	735,565	22,318	0	34,237	792,120	610,286	1,402,406
			99n	15	1,059	1	0	1,174,746	1,175,806	636	1,176,442
			00o	79	717,787	25,015	0	11,175	753,977	1,056,865	1,810,842
			00n	14	345	0	0	207,681	208,026	92	208,118
120-71-8	**	p-Cresidine	88	6	7,080	250	0	750	8,080	4,700	12,780
			95	6	4,606	0	0	0	4,606	2,200	6,806
			98o	4	2,400	0	0	0	2,400	0	2,400
			98n	No reports							
			99o	3	1,730	410	0	0	2,140	0	2,140
			99n	No reports							
			00o	4	1,732	224	0	0	1,956	12,249	14,205
			00n	No reports							
108-39-4	*	m-Cresol	88	15	18,432	283	0	455	19,170	13,503	32,673
			95	29	48,000	1,675	680,000	0	729,675	3,316	732,991
			98o	26	44,999	141	502,670	4,655	552,465	632	553,097
			98n	4	9	0	0	0	9	0	9
			99o	25	41,892	670	401,011	3,096	446,669	755	447,424
			99n	6	116	1	250	0	367	279	646
			00o	29	39,479	42	542,970	40	582,531	1,030	583,561
			00n	5	13	0	250	0	263	145	408

Note On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
** Cobalt compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	100,882	1,592,024	0	847	1,394,924	98,451	962,820	4,149,948	4,230
	98o	151,421	1,678,717	0	7,985	1,459,617	37,257	983,591	4,318,588	1,594
	98n	39,727	1,613	0	0	11,009	15	13,158,472	13,210,836	4,000
	99o	314,090	1,461,161	117	14,204	1,157,119	65,061	1,124,027	4,135,779	3,762
	99n	164,666	11,164	0	0	0	10	14,829,543	15,005,383	14
	00o	1,901,314	1,527,107	0	6,203	1,631,672	22,607	1,123,084	6,211,987	1
	00n	117,640	9,086	0	0	0	0	15,600,883	15,727,609	575
* Copper	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	490,036,967	569,537,882	506	43,341	41,185,019	1,748,570	11,862,539	1,114,414,824	91,927
	98o	538,850,837	589,901,404	189,372	499,061	45,034,610	1,429,503	9,122,403	1,185,027,190	951,983
	98n	2,708,008	817,145	0	0	1,370	27,294	281,065,001	284,618,818	0
	99o	467,473,980	618,505,574	0	331	742,921	1,676,303	8,411,205	1,096,810,314	217,771
	99n	3,363,123	1,585,842	0	0	51,153	42,171	14,486,668	19,528,957	0
	00o	644,456,385	654,247,627	49,383	193,811	416,429	3,910,170	13,612,985	1,316,886,790	86,162
	00n	2,925,470	3,214,346	0	0	57,890	38,667	6,792,201	13,028,574	1,536,149
Copper compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	214,989,831	182,618,277	0	30,802	60,471,704	2,279,073	50,032,777	510,422,464	1,323,102
	98o	186,547,521	151,835,262	0	23,292	2,737,005	1,867,554	61,483,166	404,493,800	4,149,171
	98n	5,157,232	1,760,317	0	0	483,340	132,144	1,241,335,324	1,248,868,357	297,901
	99o	220,045,744	149,364,041	1,200	324,339	3,125,432	1,485,781	52,814,888	427,161,425	4,476,459
	99n	2,013,620	2,416,660	0	0	7,214,180	491,128	1,392,988,809	1,405,124,397	330,001,048
	00o	207,624,531	159,444,739	0	18,278	708,732	1,936,962	47,753,951	417,487,193	24,178,319
	00n	1,755,725	2,043,383	0	0	117,068	65,677	1,162,055,754	1,166,037,607	140,001,553
*,** Creosote	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	64,447,471	2,180	6,100	94,871	163,131	298,027	3,208,184	68,219,964	322,988
	98o	11,514,469	717,808	2,626,352	81,103	839,960	902,470	1,901,684	18,583,846	541,740
	98n	0	0	10	49,454	523,727	41,936	2,177,407	2,792,534	0
	99o	6,427,378	696,540	2,143,805	163,252	432,906	1,051,318	1,338,805	12,254,004	519,697
	99n	0	0	471	225	1,490,119	22,639	1,179,126	2,692,580	0
	00o	10,151,880	0	2,530,570	248,677	7,194,936	1,406,417	1,906,890	23,439,370	576,812
	00n	0	0	737	44,122	1,341,493	30,745	208,106	1,625,203	0
** p-Cresidine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	51,611	6,806	58,417	3,400
	98o	0	0	0	0	0	29,000	2,400	31,400	0
	98n	No reports								
	99o	0	0	0	0	1,106	5,700	1,387	8,193	0
	99n	No reports								
	00o	0	0	0	0	528	25,949	1,956	28,433	0
	00n	No reports								
* m-Cresol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	2,309,373	1,500,001	615,425	17,910	329,024	91,159	737,708	5,600,600	151
	98o	1,769,226	1,064,540	649,489	18,878	240,659	8,216	554,568	4,305,576	719
	98n	0	0	0	45,524	40,473	0	9	86,006	0
	99o	32,821	943,956	691,506	21,386	265,690	7,763	451,744	2,414,866	667
	99n	0	0	0	44,270	531,957	0	436	576,663	0
	00o	1,398,437	1,660,747	686,588	22,475	369,856	8,346	586,900	4,733,349	94
	00n	0	0	0	0	164,419	0	46	164,465	0

Note. Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number	Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
95-48-7	o-Cresol	88	28	89,793	448	0	1,667	91,908	12,458	104,366
		95	23	12,425	82	590,000	0	602,507	5,257	607,764
		98o	21	9,270	16	466,578	20	475,884	39,525	515,409
		98n	6	12	0	0	0	12	0	12
		99o	25	11,059	19	381,376	20	392,474	2,674	395,148
		99n	7	717	1	250	11,770	12,738	743	13,481
		00o	26	10,459	14	501,865	13	512,351	4,627	516,978
		00n	4	12	0	250	0	262	141	403
106-44-5	p-Cresol	88	18	640,703	1,143	152,000	62,291	856,137	643	856,780
		95	30	44,901	1,066	342,500	0	388,467	3,168	391,635
		98o	30	57,003	43	299,485	0	356,531	50,556	407,087
		98n	5	13	0	0	0	13	0	13
		99o	29	44,818	422	244,834	68	290,142	32,884	323,026
		99n	7	148	1	250	0	399	222	621
		00o	32	41,734	398	321,553	5	363,690	33,169	396,859
		00n	4	12	0	250	0	262	142	404
1319-77-3 *	Cresol (mixed isomers)	88	111	787,305	6,811	1,804,060	4,516	2,602,692	483,488	3,086,180
		95	155	1,606,566	15,011	648,882	2,345	2,272,804	47,654	2,320,458
		98o	148	1,563,222	8,374	489,033	11,839	2,072,468	18,781	2,091,249
		98n	21	2,449	251	750	12,984	16,434	1,032	17,466
		99o	151	1,421,501	4,784	899,887	9,313	2,335,485	117,260	2,452,745
		99n	18	3,500	252	0	63,963	67,715	17,134	84,849
		00o	155	1,289,120	5,518	688,641	6,539	1,989,818	94,437	2,084,255
		00n	19	1,377	505	44,205	63,193	109,280	1,519	110,799
4170-30-3 *	Crotonaldehyde	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	7	101,579	680	391,500	0	493,759	0	493,759
		98o	6	29,584	3,800	1,300	0	34,684	0	34,684
		98n	1	0	0	0	0	0	0	0
		99o	8	28,867	37,297	1,350	0	67,514	0	67,514
		99n	3	16	1	0	0	17	176	193
		00o	9	24,378	36,838	1,400	10	62,626	0	62,626
		00n	3	0	0	0	0	0	0	0
98-82-8	Cumene	88	118	5,239,958	3,201	30,165	8,591	5,281,915	83,287	5,365,202
		95	242	1,871,060	1,490	9,403	1,102	1,883,055	71,635	1,954,690
		98o	247	1,383,677	660	1,040	34,940	1,420,317	32,683	1,453,000
		98n	160	10,507	5	0	926	11,438	720	12,158
		99o	243	1,433,081	3,133	1,271	35,199	1,472,684	17,118	1,489,802
		99n	146	11,295	19	0	12	11,326	1,188	12,514
		00o	252	1,368,024	659	642	46,545	1,415,870	97,681	1,513,551
		00n	124	18,244	6	0	518	18,768	112	18,880
80-15-9	Cumene hydroperoxide	88	40	192,523	1,784	371,000	250	565,557	22,944	588,501
		95	44	72,898	68	280,000	3,400	356,366	10,634	367,000
		98o	45	75,036	79	210,000	40,023	325,138	10,756	335,894
		98n	No reports							
		99o	49	63,230	120	330,000	40,023	433,373	9,488	442,861
		99n	3	173	0	0	0	173	14,690	14,863
		00o	49	60,529	94	130,000	40,023	230,646	9,389	240,035
		00n	2	9	0	0	0	9	0	9

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR: not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
o-Cresol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	171,098	76	304,801	321	184,032	125,072	606,682	1,392,082	116
	98o	95,701	0	339,395	1,218	206,884	17,724	516,766	1,177,688	376
	98n	0	0	0	45,524	58,649	0	12	104,185	0
	99o	29,734	75	250,748	24,837	206,544	16,996	394,795	923,729	89
	99n	0	0	0	44,270	521,460	1,500	14,240	581,470	0
	00o	101,940	0	255,956	75,292	184,453	4,338	516,128	1,138,107	65
	00n	0	0	0	0	181,191	0	164	181,355	0
p-Cresol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	137,136	900,001	454,288	58,641	239,766	989,315	392,942	3,172,089	100
	98o	83,138	654,268	449,080	76,711	1,156,104	54,263	408,665	2,882,229	280
	98n	0	0	0	45,524	58,586	0	13	104,123	0
	99o	21,521	471,978	409,814	106,705	1,394,054	45,727	322,096	2,771,895	230
	99n	0	0	0	44,270	511,244	0	416	555,930	0
	00o	12,896	817,983	544,928	129,287	1,458,101	5,964	397,279	3,366,438	150
	00n	0	0	0	0	180,329	0	168	180,497	0
* Cresol (mixed isomers)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	1,052,270	187,427	5,077,170	637,169	8,558,967	1,143,472	2,204,126	18,860,601	6,809
	98o	125,717	645,573	7,298,232	434,321	14,848,604	313,764	2,097,628	25,763,839	3
	98n	0	0	0	2,688,010	1,748,792	105,015	17,166	4,558,983	0
	99o	117,186	816,127	5,770,024	410,908	16,960,001	324,550	2,508,645	26,907,441	1,697
	99n	167,180	0	0	2,894,302	1,561,752	13,363	68,371	4,704,968	10
	00o	812,482	1,322,568	4,773,875	353,350	9,990,648	349,327	2,121,615	19,723,865	963
	00n	0	0	0	544,466	1,507,364	31,921	109,453	2,193,204	0
* Crotonaldehyde	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	202,400	0	498,820	701,220	0
	98o	0	0	1,837,500	0	569,220	16	34,884	2,441,620	0
	98n	0	0	0	0	0	0	0	0	0
	99o	0	0	1,823,660	7,492	1,255,658	1,552	66,911	3,155,273	0
	99n	0	0	0	0	252,503	0	188	252,691	0
	00o	0	0	2,156,006	1,620	1,228,087	11	62,517	3,448,241	0
	00n	0	0	0	0	102,654	784	0	103,438	0
Cumene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	17,285,493	84,937	7,057,342	1,627,931	6,417,943	189,969	2,042,567	34,706,182	2,265
	98o	19,187,037	171,269	9,230,579	855,855	16,810,289	210,393	1,565,308	48,030,730	914
	98n	161,872	500	14,642	614,478	74,840	17,918	6,105	890,355	850
	99o	20,953,597	82,294	5,572,497	1,049,045	12,803,596	142,335	1,560,333	42,163,697	519
	99n	417,429	308	21,094	711,535	389,237	3,104	9,174	1,551,881	23
	00o	2,092,834,678	114,302	3,862,910	900,628	10,522,263	103,429	1,576,171	2,109,914,381	1,910
	00n	365,804	1,697	572	626,623	166,019	5,364	15,726	1,181,805	27
Cumene hydroperoxide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	6	482,755	21,434	376,667	880,862	0
	98o	0	0	0	1,066	399,343	278,331	333,832	1,012,572	0
	98n	No reports								
	99o	0	6	500	476	1,095,436	448,749	453,287	1,998,454	0
	99n	0	0	0	50,683	111,872	15,702	326	178,583	0
	00o	0	0	400	798	1,469,095	370,717	239,155	2,080,165	0
	00n	0	0	0	0	88,060	766	9	88,835	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
135-20-6	**	Cupferron	88	4	920	0	0	0	920	0	920
			95	1	0	0	0	0	0	0	0
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	2	0	343	0	0	343	0	343
			00n	No reports							
21725-46-2	*	Cyanazine	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	5	991	492	0	0	1,483	2,527	4,010
			98o	6	193	0	0	0	193	0	193
			98n	1	9	0	0	12,000	12,009	0	12,009
			99o	2	77	0	0	0	77	0	77
			99n	1	67	0	0	81,464	81,531	0	81,531
			00o	1	33	0	0	0	33	7,900	7,933
			00n	No reports							
--		Cyanide compounds	88	393	1,248,012	195,244	3,707,326	107,208	5,257,790	581,408	5,839,198
			95	248	1,075,114	89,753	4,429,640	18,581	5,613,088	154,577	5,767,665
			98o	244	703,388	54,618	3,762,384	16,821	4,537,211	113,184	4,650,395
			98n	87	62,250	3,010	18,750	3,973,818	4,057,828	45,427	4,103,255
			99o	243	944,538	68,306	3,459,749	10,989	4,483,582	74,797	4,558,379
			99n	68	14,184	2,162	19,000	2,486,994	2,522,340	8,873	2,531,213
			00o	233	608,314	70,461	3,920,182	10,617	4,609,574	56,531	4,666,105
			00n	58	35,004	1,786	750	1,786,143	1,823,683	28,200	1,851,883
1134-23-2	*	Cycloate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	26	1,108	16	0	1,150	242	1,392
			98o	3	97	113	77	0	287	4	291
			98n	No reports							
			99o	3	625	113	89	0	827	684	1,511
			99n	No reports							
			00o	2	14	0	53	0	67	164	231
			00n	No reports							
110-82-7	*	Cyclohexane	88	304	13,984,542	20,071	334,471	38,190	14,377,274	211,575	14,588,849
			95	367	8,099,139	18,908	238,200	10,809	8,367,056	105,702	8,472,758
			98o	381	5,970,033	13,720	348,428	1,357	6,333,538	56,058	6,389,596
			98n	197	84,998	28	8,430	262	93,718	12,027	105,745
			99o	373	4,915,907	13,310	272,426	1,051	5,202,694	104,278	5,306,972
			99n	194	73,299	26	61,998	6,422	141,745	13,156	154,901
			00o	382	4,295,114	17,811	158,477	2,537	4,473,939	23,638	4,497,577
			00n	186	360,591	275	138,167	1,583	500,616	25,774	526,390
108-93-0	*	Cyclohexanol	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	25	167,959	154	3,623,000	0	3,791,113	70	3,791,183
			98o	27	300,624	298	4,307,800	0	4,608,722	1,490	4,610,212
			98n	3	43	0	0	0	43	13	56
			99o	24	161,524	41	3,730,307	0	3,891,872	881	3,892,753
			99n	7	9	0	0	0	9	181	190
			00o	27	146,667	4,978	3,867,623	0	4,019,268	4,857	4,024,125
			00n	9	263	5	0	311,600	311,868	0	311,868

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR: not reportable (chemicals added to the TRI list after 1988)
DC: definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
** Cupferron	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	5,648	0	5,648	0
	98o	0	0	13,228	659	0	0	0	13,887	0
	98n	No reports								
	99o	0	0	3,750	9,623	0	0	0	13,373	0
	99n	No reports								
	00o	0	0	15,075	0	3,432	0	343	18,850	0
	00n	No reports								
* Cyanazine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	545,000	8,100	3,887	556,987	0
	98o	0	0	0	0	43,000	27,576	453	71,029	0
	98n	0	0	0	0	0	0	12,000	12,000	0
	99o	0	0	0	0	0	75,400	75,500	150,900	0
	99n	0	0	0	0	0	0	81,531	81,531	0
	00o	0	0	0	0	0	27,430	27,430	54,860	0
	00n	No reports								
Cyanide compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	664,976	32,518	19,000	3,523	9,329,211	718,523	5,685,613	16,453,364	6,215
	98o	1,692,214	58,277	7,028,885	2,185	11,967,217	723,026	4,574,477	26,046,281	2,488
	98n	4,775,375	0	143	195	22,269,231	55,905	4,060,011	31,160,860	12
	99o	463,102	24,093	5,174,259	31	12,980,685	1,060,539	4,531,548	24,234,257	25,127
	99n	1,096,015	0	92	116	12,243,449	20,585	2,611,769	15,972,026	27,241
	00o	618,990	10,232	4,949,571	11,322	9,156,001	814,611	4,683,780	20,244,507	2,352
	00n	845,054	0	0	1,059	10,430,766	10,593	1,852,152	13,139,624	105
* Cycloate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	2,000	6,001	1,346	9,347	0
	98o	0	0	0	0	1,148	3,574	289	5,011	0
	98n	No reports								
	99o	0	0	0	0	1,097	2,054	600	3,751	1,652
	99n	No reports								
	00o	0	0	0	0	53	0	230	283	0
	00n	No reports								
* Cyclohexane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	54,644,021	1,585,369	10,345,060	5,145,025	23,742,793	1,250,232	8,427,086	105,139,586	123,181
	98o	67,121,132	638,830	18,369,452	3,402,221	21,858,011	4,380,789	6,198,580	121,969,015	8,862
	98n	457,159	1,685	3,156	4,891,083	3,435,597	248,265	93,750	9,130,695	328
	99o	42,836,346	961,404	15,660,044	2,019,569	22,424,903	2,183,065	5,327,681	91,413,012	175,091
	99n	1,567,007	63,963	18,735	2,573,663	3,408,308	135,743	146,393	7,913,812	2,161
	00o	36,086,420	855,034	23,079,726	2,260,656	227,638,515	1,407,325	4,438,626	295,766,302	72,539
	00n	962,903	40,951	15,328	9,362,622	2,348,945	626,804	520,791	13,878,344	923
* Cyclohexanol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	677,199	16,473	154,921	21,584	3,836,687	4,706,864	0
	98o	0	0	3,021,084	75,661	150,421	104,240	4,649,061	8,000,467	0
	98n	0	0	29	144	12,360	0	33	12,566	0
	99o	0	100	1,781,743	64,445	155,135	89,275	3,871,747	5,962,445	0
	99n	0	0	0	31	82,814	0	181	83,026	0
	00o	0	2,170	3,097,376	91,181	432,708	20,570	4,008,065	7,652,070	0
	00n	0	0	0	78,170	35,247	76,750	31,714	221,881	0

Note. Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
68359-37-5	*	Cyfluthrin	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	10	0	0	0	10	0	10
			98o	2	4	1	0	0	5	0	5
			98n	1	0	0	0	0	0	0	0
			99o	4	16	72	0	0	88	0	88
			99n	1	0	0	0	0	0	0	0
			00o	2	3	22	0	0	25	0	25
			00n	1	0	0	0	0	0	0	0
68085-85-8	*	Cyhalothrin	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							
94-75-7	*,**	2,4-D (acetic acid)	88	28	7,020	549	3,789	38,000	49,358	68,422	117,780
			95	27	6,888	1,083	250	4,325	12,546	17,430	29,976
			98o	28	3,970	88	1,300	1,798	7,156	2,887	10,043
			98n	6	18	0	29,909	0	29,927	269	30,196
			99o	28	7,879	74	440	1,798	10,191	11,426	21,617
			99n	7	34	0	21,850	0	21,884	480	22,364
			00o	24	6,797	256	250	1,831	9,134	23,887	33,021
			00n	6	19	0	0	0	19	67	86
533-74-4	*	Dazomet	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	11	1,042	230	0	0	1,272	2,578	3,850
			98o	14	0	0	0	0	0	1,274	1,274
			98n	No reports							
			99o	15	250	450	0	5	705	250	955
			99n	No reports							
			00o	18	2,792	600	0	0	3,392	0	3,392
			00n	1	0	0	13,515	0	13,515	0	13,515
53404-60-7	*	Dazomet, sodium salt	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	0	0	0	0	0	250	250
			98o	2	0	0	0	0	0	0	0
			98n	No reports							
			99o	2	0	0	0	0	0	0	0
			99n	No reports							
			00o	2	0	0	0	0	0	0	0
			00n	No reports							
94-82-6	*	2,4-DB	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	750	0	0	0	750	0	750
			98o	2	7	0	0	0	7	0	7
			98n	1	10	0	0	0	10	0	10
			99o	2	17	0	0	0	17	0	17
			99n	No reports							
			00o	3	20	0	0	0	20	0	20
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988).
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*	Cyfluthrin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	989	890	20	1,899	0
		98o	0	0	0	0	3,496	964	5	4,465	0
		98n	0	0	0	0	15,916	0	0	15,916	0
		99o	0	0	0	0	3,024	1,623	83	4,730	0
		99n	0	0	0	0	13,783	0	0	13,783	0
		00o	0	0	0	0	462	790	25	1,277	0
		00n	0	0	0	0	13,783	0	0	13,783	0
*	Cyhalothrin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	0	0	0	0	0	0	0	0	0
		99n	No reports								
		00o	0	0	0	0	0	0	0	0	0
		00n	No reports								
*,**	2,4-D (acetic acid)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	29,200	0	0	0	23,780	24,490	27,595	105,065	6,186
		98o	87,757	0	0	11	111,450	59,436	9,964	268,618	0
		98n	0	0	0	0	125,425	0	30,192	155,617	0
		99o	94,815	0	0	0	118,130	63,548	26,173	302,666	0
		99n	0	0	0	0	386,422	164	22,131	408,717	0
		00o	15,559	0	0	0	149,047	29,972	39,042	233,620	0
		00n	0	0	0	769	185,510	114	87	186,480	0
*	Dazomet	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	20,110	1,178	3,542	24,830	0
		98o	0	0	0	0	100	2,100	1,400	3,600	0
		98n	No reports								
		99o	0	0	0	0	13,093	9,803	602	23,498	0
		99n	No reports								
		00o	0	0	0	0	40,100	20,671	3,400	64,171	0
		00n	0	0	0	0	0	0	13,515	13,515	0
*	Dazomet, sodium salt	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	56	7,807	0	7,863	0
		98o	0	0	0	0	73	12,620	90	12,783	0
		98n	No reports								
		99o	0	0	0	0	38	12,165	4	12,207	0
		99n	No reports								
		00o	0	0	0	0	72	12,060	8	12,140	0
		00n	No reports								
*	2,4-DB	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	217	290	507	0
		98o	0	0	0	0	0	14	7	21	0
		98n	0	0	0	21,140	0	0	10	21,150	0
		99o	0	0	0	0	0	8	17	25	0
		99n	No reports								
		00o	0	0	0	0	0	19	10	29	0
		00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
1929-73-3	*,**	2,4-D butoxyethyl ester	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	510	0	0	0	510	0	510
			98o	2	255	0	0	0	255	0	255
			98n	No reports							
			99o	3	255	0	0	0	255	0	255
			99n	No reports							
			00o	4	255	0	0	0	255	0	255
			00n	No reports							
94-80-4	*,**	2,4-D butyl ester	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	3	0	0	0	3	0	3
			98o	2	1	0	0	0	1	0	1
			98n	No reports							
			99o	2	0	1	0	0	1	0	1
			99n	No reports							
			00o	2	4	1	0	0	5	0	5
			00n	No reports							
2971-38-2	**	2,4-D chlorocrotyl ester	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
1163-19-5		Decabromodiphenyl oxide	88	58	29,604	500	292	21,450	51,846	555,181	607,027
			95	140	39,283	3,846	11	204,248	247,388	716,245	963,633
			98o	144	31,114	3,168	0	191,253	225,535	715,484	941,019
			98n	1	0	0	0	310,000	310,000	0	310,000
			99o	145	116,241	2,701	0	396,169	515,111	858,530	1,373,641
			99n	2	0	0	0	350,000	350,000	0	350,000
			00o	146	106,219	9,006	0	487,409	602,634	948,741	1,551,375
			00n	3	0	0	0	400,837	400,837	0	400,837
13684-56-5	*	Desmedipham	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	1	94	0	0	0	94	0	94
			98n	No reports							
			99o	1	62	0	0	0	62	0	62
			99n	No reports							
			00o	1	52	0	0	0	52	0	52
			00n	No reports							
1928-43-4	*,**	2,4-D 2-Ethylhexyl ester	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	11	2,765	250	0	0	3,015	3,131	6,146
			98o	10	4,722	5	0	0	4,727	1,735	6,462
			98n	No reports							
			99o	10	4,672	5	0	0	4,677	927	5,604
			99n	No reports							
			00o	10	4,237	0	0	0	4,237	250	4,487
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*,**2,4-D butoxyethyl ester	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	1,600	318	1,918	0
	98o	0	0	0	0	0	0	76	76	0
	98n	No reports								
	99o	0	0	0	0	0	0	26	26	0
	99n	No reports								
	00o	0	0	0	0	0	0	89	89	0
	00n	No reports								
*,**2,4-D butyl ester	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	600	0	3	603	0
	98o	0	0	0	0	9,400	0	1	9,401	0
	98n	No reports								
	99o	0	0	0	0	11,000	0	1	11,001	0
	99n	No reports								
	00o	0	0	0	0	11,900	0	4	11,904	0
	00n	No reports								
** 2,4-D chlorocrotyl ester	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
Decabromodiphenyl oxide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	992,673	144,205	0	18,686	32,138	322,935	947,336	2,457,973	3,794
	98o	264,731	88,843	385	3,214	43,588	262,535	910,885	1,574,181	0
	98n	0	0	0	0	0	0	310,000	310,000	0
	99o	368,187	29,609	6,600	8,732	58,412	359,773	1,335,241	2,166,554	0
	99n	0	0	0	0	29,784	29,784	350,000	409,568	0
	00o	336,590	232,115	0	8,927	90,178	294,412	1,458,291	2,420,513	26
	00n	0	0	0	0	19,500	0	420,337	439,837	0
* Desmedipham	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	0	0	0	0	0	1,150	94	1,244	0
	98n	No reports								
	99o	0	0	0	0	0	691	62	753	0
	99n	No reports								
	00o	0	0	0	0	0	205	52	257	0
	00n	No reports								
*,**2,4-D 2-Ethylhexyl ester	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	36,531	0	0	0	0	10,318	5,468	52,317	0
	98o	7,870	0	0	0	0	14,179	6,334	28,383	0
	98n	No reports								
	99o	13,250	0	0	0	0	9,898	6,150	29,298	0
	99n	No reports								
	00o	21,312	0	0	0	0	9,956	4,933	36,201	0
	00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
53404-37-8	*,**	2,4-D 2-Ethyl-4-methylpentyl ester	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
2303-16-4	*	Diallate	88	No reports							
			95	No reports							
			98o	No reports							
			98n	1	0	0	0	0	0	0	0
			99o	No reports							
			99n	3	7	1	0	0	8	170	178
			00o	No reports							
			00n	3	1	0	0	0	1	0	1
615-05-4	**	2,4-Diamino-anisole	88	1	0	0	0	0	0	0	0
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
39156-41-7	**	2,4-Diamino-anisole sulfate	88	1	0	0	0	0	0	0	0
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
101-80-4	**	4,4'-Diaminodi-phenyl ether	88	5	216	585	0	0	801	142	943
			95	3	23	359	0	0	382	120	502
			98o	3	22	340	0	0	362	55	417
			98n	No reports							
			99o	3	169	449	0	0	618	41	659
			99n	No reports							
			00o	3	336	359	0	0	695	0	695
			00n	No reports							
95-80-7	**	2,4-Diamino-toluene	88	2	2,988	250	0	0	3,238	0	3,238
			95	5	500	0	0	0	500	0	500
			98o	3	1,954	0	0	0	1,954	0	1,954
			98n	2	5	0	0	0	5	54,062	54,067
			99o	2	629	0	0	0	629	0	629
			99n	4	35	0	0	0	35	774	809
			00o	2	466	0	0	0	466	0	466
			00n	3	4	0	0	0	4	127	131

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988).
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*,**2,4-D 2-Ethyl-4-methylpentyl ester	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
* Diallate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	0	0	0	0	0	0	0	0	0
	99o	No reports								
	99n	0	0	0	0	176,396	0	175	176,571	0
	00o	No reports								
	00n	0	0	0	0	106,923	769	1	107,693	0
** 2,4-Diaminoanisole	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
** 2,4-Diaminoanisole sulfate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
** 4,4'-Diaminodiphenyl ether	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	4,929	380,289	377	385,595	0
	98o	0	0	0	0	140	4,483	357	4,980	0
	98n	No reports								
	99o	0	0	0	0	62	138	613	813	0
	99n	No reports								
	00o	0	0	0	0	158	6,798	695	7,651	0
	00n	No reports								
** 2,4-Diaminotoluene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	7,192	29,774	655	37,621	0
	98o	0	0	0	0	67,020	360	1,953	69,333	0
	98n	0	0	0	0	40,920	162,187	54,065	257,172	0
	99o	0	0	0	0	8,987	0	624	9,611	0
	99n	0	0	0	0	778,686	0	795	779,481	0
	00o	0	0	0	0	9,055	250	715	10,020	0
	00n	0	0	0	0	529,584	0	131	529,715	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
25376-45-8	**	Diaminotoluene (mixed isomers)	88	13	21,097	3,288	174,000	295	198,680	289,591	488,271
			95	11	9,594	5,522	7,050	55	22,221	28,625	50,846
			98o	13	13,523	5,785	13,000	205	32,513	12,531	45,044
			98n	2	10	0	0	0	10	0	10
			99o	11	10,381	28,633	6,200	14	45,228	15,912	61,140
			99n	6	287	1	0	0	288	1,030	1,318
			00o	13	8,956	1,929	23,000	13	33,898	9,026	42,924
			00n	5	260	0	0	0	260	377	637
333-41-5	*	Diazinon	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	31	3,245	8	0	0	3,253	1,560	4,813
			98o	29	13,564	11	0	0	13,575	1,955	15,530
			98n	5	15	0	0	0	15	157	172
			99o	32	26,532	13	0	0	26,545	2,326	28,871
			99n	5	15	0	0	0	15	75	90
			00o	29	13,088	13	0	0	13,101	2,321	15,422
			00n	5	16	1,300	0	0	1,316	0	1,316
334-88-3		Diazomethane	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	1	4	0	0	0	4	0	4
			99n	No reports							
			00o	No reports							
			00n	No reports							
132-64-9		Dibenzofuran	88	110	71,093	1,510	0	9,929	82,532	181,799	264,331
			95	37	18,704	2,843	0	220	21,767	19,824	41,591
			98o	41	93,615	29	0	56,670	150,314	13,304	163,618
			98n	3	615	0	0	0	615	0	615
			99o	38	57,743	20	0	40	57,803	16,835	74,638
			99n	1	4	0	0	0	4	0	4
			00o	43	33,392	16	0	0	33,408	11,370	44,778
			00n	2	0	0	0	0	0	0	0
96-12-8	*,**	1,2-Dibromo-3-chloropropane	88	No reports							
			95	No reports							
			98o	No reports							
			98n	1	0	0	0	0	0	0	0
			99o	No reports							
			99n	1	0	0	0	0	0	6	6
			00o	No reports							
			00n	2	1	0	0	0	1	0	1
106-93-4	*,**	1,2-Dibromo-ethane	88	34	63,342	1,011	6,882	259	71,494	27,924	99,418
			95	19	12,372	306	0	256	12,934	3	12,937
			98o	12	10,047	6	0	1	10,054	0	10,054
			98n	1	0	0	0	0	0	0	0
			99o	13	9,103	11	0	7	9,121	35,514	44,635
			99n	2	5	1	0	0	6	5	11
			00o	16	13,821	11	69	0	13,901	1,829	15,730
			00n	3	1	0	0	0	1	0	1

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
** Diaminotoluene (mixed isomers)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	755,917	386,996	362,357	1,923,183	48,109	3,476,562	3,550
	98o	0	0	2,714,193	4,287,968	669,862	1,072,322	44,224	8,788,569	255
	98n	0	0	0	10,092	961,202	0	13	971,307	0
	99o	0	82,392	2,202,232	9,014,291	340,504	516,564	61,864	12,217,847	9
	99n	0	0	0	70,190	1,219,290	2,922	12,470	1,304,872	0
	00o	0	0	2,815,016	10,022,331	801,315	910,292	41,638	14,590,592	12
	00n	0	0	0	11,106	1,365,713	791	208	1,377,818	0
* Diazinon	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	21,330	0	0	1	66,150	7,596	4,355	99,432	0
	98o	53,095	0	0	0	37,803	33,649	15,018	139,565	0
	98n	0	0	0	0	180,882	4	162	181,048	0
	99o	63,631	0	0	0	86,025	57,255	26,738	233,649	0
	99n	0	97	0	0	295,239	0	80	295,416	0
	00o	27,782	0	0	0	92,121	65,953	15,402	201,258	0
	00n	0	0	0	0	291,882	295	1,316	293,493	0
Diazomethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	0	0	0	0	232	0	4	236	0
	99n	No reports								
	00o	No reports								
	00n	No reports								
Dibenzofuran	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	70,546	25,036	113	176	405,125	1,471	37,508	539,975	13,217
	98o	131,734	4,920	230,475	92,830	26,678	5,981	119,032	611,650	1,300
	98n	0	0	0	1,352,711	32,439	0	615	1,385,765	0
	99o	109,749	1,450	210,545	96,365	31,728	1,887	77,457	529,181	0
	99n	0	0	0	0	77,842	0	4	77,846	0
	00o	182,354	290	0	23,827	29,206	53,569	43,968	333,214	0
	00n	0	0	0	0	77,841	0	0	77,841	0
*,** 1,2-Dibromo-3-chloropropane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	0	0	0	0	0	0	0	0	0
	99o	No reports								
	99n	0	0	0	0	29,000	0	3	29,003	0
	00o	No reports								
	00n	0	0	0	0	14,947	773	1	15,721	0
*,** 1,2-Dibromo-ethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	5,000	0	60	17	34,174	72,467	11,740	123,458	0
	98o	0	0	0	8,701	17,054	863	9,899	36,517	0
	98n	0	0	0	0	0	0	0	0	0
	99o	0	0	0	120,000	22,252	58,073	9,226	209,551	791
	99n	0	0	0	0	84,312	0	7	84,319	0
	00o	87	0	20,180	156,034	18,210	2,850	13,398	210,759	22
	00n	0	0	0	0	41,471	721	1	42,193	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	On-site Releases: Surface Water Discharges Pounds	On-site Releases: Underground Injection Pounds	On-site Releases: Releases to Land Pounds	On-site Releases: Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
124-73-2		Dibromotetra-fluoroethane (Halon 2402)	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	1	10	0	0	0	10	0	10
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							
84-74-2	*	Dibutyl phthalate	88	126	204,058	14,339	350,000	6,395	574,792	113,068	687,860
			95	126	104,833	3,981	390,000	1,402	500,216	25,991	526,207
			98o	109	33,577	206	210,000	5,480	249,263	25,676	274,939
			98n	62	834	0	0	0	834	560	1,394
			99o	118	35,606	273	290,000	23,880	349,759	41,342	391,101
			99n	69	1,126	6	0	9,421	10,553	9,006	19,559
			00o	133	84,856	131	150,000	25,020	260,007	21,600	281,607
			00n	57	473	0	250	1,440	2,163	1,443	3,606
1918-00-9	*	Dicamba	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	6	12,580	250	113,600	0	126,430	0	126,430
			98o	9	1,207	59	32,000	0	33,266	2,100	35,366
			98n	2	10	0	0	0	10	77	87
			99o	13	1,259	37	18,600	0	19,896	140	20,036
			99n	2	2	0	0	0	2	87	89
			00o	17	1,161	6	4,500	0	5,667	170	5,837
			00n	2	2	0	0	0	2	57	59
99-30-9	*	Dichloran	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	4	10	0	0	0	10	0	10
			98o	3	0	0	0	0	0	0	0
			98n	1	0	0	0	0	0	0	0
			99o	3	0	0	0	0	0	0	0
			99n	1	0	0	0	0	0	0	0
			00o	3	0	0	0	0	0	0	0
			00n	No reports							
95-50-1	*	1,2-Dichloro-benzene	88	45	530,535	11,624	20,000	13,354	575,513	38,266	613,779
			95	28	271,539	3,789	26,000	11,521	312,849	28,228	341,077
			98o	36	208,463	2,352	3,800	1,245	215,860	6,076	221,936
			98n	10	1,036	5	5	0	1,046	610	1,656
			99o	35	308,537	2,069	2,500	475	313,581	7,920	321,501
			99n	10	1,741	1	0	65,593	67,335	1,566	68,901
			00o	33	120,846	1,206	1,600	778	124,430	9,540	133,970
			00n	8	296	0	250	0	546	292	838
541-73-1		1,3-Dichloro-benzene	88	6	15,282	1,281	0	0	16,563	290	16,853
			95	6	7,528	526	0	0	8,054	0	8,054
			98o	6	4,018	203	0	0	4,221	0	4,221
			98n	2	5	0	0	0	5	0	5
			99o	8	3,640	807	0	0	4,447	0	4,447
			99n	2	9	1	0	0	10	30	40
			00o	8	5,816	210	0	0	6,026	0	6,026
			00n	5	11	0	0	0	11	219	230

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
	Dibromotetra-fluoroethane (Halon 2402)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	127,308	0	0	0	0	0	10	127,318	0
		98n	No reports								
		99o	130,692	0	0	0	0	0	0	130,692	0
		99n	No reports								
		00o	139,173	0	0	0	0	0	0	139,173	0
		00n	No reports								
*	Dibutyl phthalate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	51,458	26,123	1,086,538	172,397	314,761	115,699	386,156	2,153,132	173,700
		98o	30,100	12,207	1,028,453	215,856	177,719	95,702	280,203	1,840,240	0
		98n	0	0	0	288,896	89,847	1,697	668	381,108	0
		99o	27,111	5,499	913,586	195,636	329,784	161,391	405,006	2,038,013	74
		99n	17,911	0	0	24,730	355,078	12,444	15,096	425,259	457
		00o	23,730	7,055	545,332	165,035	484,248	97,654	311,168	1,634,222	0
		00n	0	0	128	69,984	205,470	3,062	1,717	280,361	0
*	Dicamba	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	510	0	0	0	0	29	126,662	127,201	0
		98o	0	0	0	0	37,557	65,900	35,366	138,823	0
		98n	0	0	0	0	22,223	0	87	22,310	0
		99o	0	0	0	0	39,143	42,080	20,039	101,262	0
		99n	0	0	0	0	27,830	0	90	27,920	0
		00o	0	0	0	0	61,680	8,210	6,781	76,671	0
		00n	0	0	0	0	22,181	4	59	22,244	0
*	Dichloran	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	50	25	10	85	0
		98o	0	0	0	0	0	0	0	0	0
		98n	0	0	0	0	39,948	0	0	39,948	0
		99o	0	0	0	0	0	0	0	0	0
		99n	0	0	0	0	55,619	0	0	55,619	0
		00o	0	0	0	0	0	0	0	0	0
		00n	No reports								
*	1,2-Dichloro-benzene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	5,527,161	3,626,496	354,610	763,438	172,717	1,999,033	340,963	12,784,418	153
		98o	11,995,819	2,222,086	1,395,535	513,369	374,719	973,511	216,633	17,691,672	62
		98n	2,230,878	0	159	42,595	653,679	4,239,558	1,443	7,168,312	2
		99o	11,893,164	1,378,067	3,964,034	546,751	713,178	1,496,579	327,728	20,319,501	258
		99n	1,705,966	0	412	43,256	1,303,837	314,609	67,005	3,435,085	53
		00o	13,757,219	968	3,373,136	959,513	828,036	880,362	135,141	19,934,375	29
		00n	0	0	237	766	877,179	405	408	878,995	0
	1,3-Dichloro-benzene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	5,068	1,291	0	0	10	3,989	8,079	18,437	36
		98o	1,988	950	0	0	10	2,555	4,260	9,763	1
		98n	0	0	0	0	20,077	202	1	20,280	0
		99o	2,129	930	68,399	0	20,895	3,169	4,439	99,961	5
		99n	0	0	0	0	247,556	0	37	247,593	0
		00o	10,193	930	25,323	0	120	47,684	6,120	90,370	1
		00n	0	0	0	0	121,461	857	230	122,548	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
106-46-7	*,**	1,4-Dichloro-benzene	88	24	1,891,419	6,153	4,000	1,300	1,902,872	750	1,903,622
			95	24	242,372	1,287	0	3,100	246,759	3,328	250,087
			98o	19	181,899	1,706	3,100	460	187,165	0	187,165
			98n	11	417	0	0	0	417	81	498
			99o	23	178,210	1,880	7,300	1,370	188,760	0	188,760
			99n	6	44	1	0	0	45	18	63
			00o	17	117,860	1,193	7,946	181	127,180	0	127,180
			00n	8	19	5	255	0	279	258	537
25321-22-6	**	Dichlorobenzene (mixed isomers)	88	15	163,684	40	0	0	163,724	19,672	183,396
			95	9	5,443	0	0	0	5,443	9	5,452
			98o	6	14,218	0	0	0	14,218	8	14,226
			98n	8	319	250	0	0	569	1,498	2,067
			99o	5	13,796	0	0	0	13,796	0	13,796
			99n	7	52	0	0	0	52	357	409
			00o	7	10,350	0	0	0	10,350	709	11,059
			00n	5	61	0	0	0	61	42	103
91-94-1	**	3,3'-Dichloro-benzidine	88	14	255	752	0	0	1,007	209,785	210,792
			95	3	11	0	0	0	11	2,400	2,411
			98o	1	255	0	0	0	255	41,600	41,855
			98n	3	6	0	0	0	6	0	6
			99o	2	15	0	0	0	15	44,145	44,160
			99n	4	5	0	0	0	5	161	166
			00o	1	10	0	0	0	10	24,000	24,010
			00n	4	17	0	0	0	17	0	17
612-83-9	**	3,3'-Dichloro-benzidine dihydrochloride	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	13	0	0	0	0	0	0	0
			98o	16	250	5	0	0	255	6,790	7,045
			98n	No reports							
			99o	16	7	5	0	0	12	3,400	3,412
			99n	No reports							
			00o	16	16	5	0	0	21	2,300	2,321
			00n	No reports							
64969-34-2	**	3,3'-Dichloro-benzidine sulfate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	1	0	0	0	0	0	260	260
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							
75-27-4	**	Dichlorobromo-methane	88	1	13,440	0	0	0	13,440	0	13,440
			95	1	2,300	0	0	50	2,350	0	2,350
			98o	1	2,370	0	0	90	2,460	0	2,460
			98n	No reports							
			99o	2	3,405	0	0	80	3,485	0	3,485
			99n	No reports							
			00o	2	5,074	0	0	168	5,242	0	5,242
			00n	1	0	0	0	0	0	0	0

Note. On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*,**1,4-Dichloro-benzene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	705,345	34,882	42,157	11,053	73,030	621,194	248,721	1,736,382	1,606
	98o	2,602,061	0	134,272	6,691	1,766	299,525	185,980	3,230,295	108
	98n	36,560	0	1	149,250	376,335	1,350	256	563,752	0
	99o	1,927,605	0	416,356	2,702	18,350	390,802	188,336	2,944,151	49,304
	99n	28,229	0	0	8,306	658,480	1	48	695,064	5
	00o	1,871,164	0	0	0	3,784	341,596	126,487	2,343,031	27
	00n	0	0	0	1,824	400,813	9,359	160	412,156	0
** Dichlorobenzene (mixed isomers)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	266,997	5,165	79,032	3,684	5,452	360,330	0
	98o	0	0	191,010	611	248,100	6,720	14,226	460,667	0
	98n	0	4,724	2,147	712,291	321,134	328	1,849	1,042,473	0
	99o	0	0	1,567,000	0	1	13,402	13,796	1,594,199	0
	99n	0	0	613	665,533	207,957	0	154	874,257	11
	00o	0	0	249,490	717	180,000	6,641	10,350	447,198	0
	00n	0	0	0	856,180	235,813	0	104	1,092,097	0
** 3,3'-Dichloro-benzidine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	22,000	14,000	1,600	2,701	40,301	0
	98o	0	0	0	0	10,000	45,000	42,000	97,000	0
	98n	0	0	0	0	65,021	63	2	65,086	0
	99o	0	0	0	0	11,787	64,065	44,001	119,853	0
	99n	0	0	0	0	237,063	0	163	237,226	0
	00o	0	0	0	150,000	3,900	24,000	19,000	196,900	1
	00n	0	0	0	0	180,513	780	17	181,310	0
** 3,3'-Dichloro-benzidine dihydrochloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	12,797	22,000	0	34,797	0
	98o	0	0	0	0	6,716	48,000	6,801	61,517	0
	98n	No reports								
	99o	0	0	0	0	4,644	85,002	3,402	93,048	0
	99n	No reports								
	00o	0	0	0	17,000	7,077	37,400	2,303	63,780	0
	00n	No reports								
** 3,3'-Dichloro-benzidine sulfate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	1,300	2,400	0	3,700	0
	98o	0	0	0	0	0	6,000	260	6,260	0
	98n	No reports								
	99o	0	0	0	0	0	12,000	0	12,000	0
	99n	No reports								
	00o	0	0	0	6,800	0	5,700	0	12,500	0
	00n	No reports								
** Dichlorobromo-methane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	2,300	2,300	0
	98o	0	0	0	0	0	0	2,400	2,400	0
	98n	No reports								
	99o	0	0	0	0	470	4	3,501	3,975	0
	99n	No reports								
	00o	0	0	0	0	7,870	0	5,162	13,032	0
	00n	0	0	0	0	0	0	0	0	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number	Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
764-41-0	1,4-Dichloro-2-butene	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	2	3,950	0	4,500	0	8,450	0	8,450
		98o	3	1,713	0	5,700	0	7,413	0	7,413
		98n	1	0	0	0	0	0	0	0
		99o	3	910	0	1,200	0	2,110	0	2,110
		99n	1	26	1	0	0	27	4	31
		00o	4	915	0	1,100	0	2,015	0	2,015
		00n	2	0	0	0	0	0	0	0
110-57-6	trans-1,4-Dichloro-2-butene	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	1	137	0	0	0	137	0	137
		98o	1	1	0	0	0	1	0	1
		98n	No reports							
		99o	1	1	0	0	0	1	0	1
		99n	2	255	0	0	0	255	158	413
		00o	1	5	0	0	0	5	0	5
		00n	1	250	0	0	0	250	0	250
1649-08-7	1,2-Dichloro-1,1-difluoroethane (HCFC-132b)	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	1	890	20	0	0	910	89	999
		98o	2	837	48	0	0	885	0	885
		98n	1	5	0	0	0	5	0	5
		99o	2	17,310	45	0	0	17,355	0	17,355
		99n	1	10	0	0	0	10	5	15
		00o	2	9,225	45	0	0	9,270	0	9,270
		00n	1	10	0	0	0	10	5	15
75-71-8 *	Dichlorodifluoromethane (CFC-12)	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	137	3,249,946	17,172	89	0	3,267,207	320	3,267,527
		98o	56	728,985	13,005	0	0	741,990	0	741,990
		98n	5	24,607	0	250	0	24,857	107	24,964
		99o	46	717,749	5	0	0	717,754	8,668	726,422
		99n	5	18,579	1	0	0	18,580	32	18,612
		00o	39	542,974	5	0	0	542,979	0	542,979
		00n	5	10,137	1	0	0	10,138	1	10,139
107-06-2 *,**	1,2-Dichloroethane	88	110	4,615,179	40,527	1,452,084	2,166	6,109,956	166,131	6,276,087
		95	83	1,292,842	5,194	24,339	256	1,322,631	23,671	1,346,302
		98o	71	708,117	2,337	2,178	886	713,518	143,735	857,253
		98n	19	284	271	56,816	0	57,371	23,011	80,382
		99o	72	540,754	833	1,171	2,983	545,741	665,922	1,211,663
		99n	16	814	71	64,294	0	65,179	2,299	67,478
		00o	74	517,298	791	136	2,271	520,496	399,656	920,152
		00n	19	2,278	48	171,287	0	173,613	16,345	189,958
540-59-0	1,2-Dichloroethylene	88	10	126,478	95	0	1	126,574	87,614	214,188
		95	10	8,527	270	0	0	8,797	0	8,797
		98o	11	5,383	44	0	0	5,427	0	5,427
		98n	7	533	0	0	0	533	387	920
		99o	9	4,901	390	0	0	5,291	0	5,291
		99n	8	1,539	1	0	0	1,540	13,282	14,822
		00o	11	4,474	575	0	0	5,049	7	5,056
		00n	7	221	5	0	0	226	127	353

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR: not reportable (chemicals added to the TRI list after 1988)
DC: definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
1,4-Dichloro-2-butene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	13,000	3,300,000	312,500	8,450	3,633,950	0
	98o	1,800,000	0	0	0	3,753,000	124,000	7,413	5,684,413	0
	98n	0	0	0	0	0	0	0	0	0
	99o	0	0	0	0	5,800,000	13,390	2,110	5,815,500	0
	99n	0	0	0	0	60,000	0	26	60,026	0
	00o	0	0	0	0	7,000,000	105,978	2,015	7,107,993	0
	00n	0	0	0	0	16,055	781	0	16,836	0
trans-1,4-Dichloro-2-butene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	137	137	0
	98o	0	0	0	0	12,000	0	1	12,001	0
	98n	No reports								
	99o	0	0	0	0	13,000	0	1	13,001	0
	99n	0	0	0	0	129,737	0	205	129,942	0
	00o	0	0	0	0	11,000	0	5	11,005	0
	00n	0	0	0	0	90,587	0	81	90,668	0
1,2-Dichloro-1,1-difluoroethane (HCFC-132b)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	98,000	22,000	1,000	121,000	0
	98o	0	0	0	0	320,000	61,573	880	382,453	0
	98n	0	0	0	0	39,584	0	3	39,587	0
	99o	0	0	0	0	370,000	91,532	17,010	478,542	0
	99n	0	0	0	0	27,318	0	2	27,320	0
	00o	0	0	0	15,735	560,000	78,758	9,225	663,718	0
	00n	0	0	0	0	55,032	0	4	55,036	0
* Dichlorodifluoromethane (CFC-12)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	552,377	466,714	408,747	225	126,167	114,628	3,241,865	4,910,723	18,429
	98o	80,253	213,260	0	0	38,976	79,124	744,610	1,156,223	0
	98n	0	0	0	0	199,704	8	24,723	224,435	0
	99o	246,309	178,692	0	0	170	140,671	658,040	1,223,882	10,653
	99n	0	0	0	0	292,534	135	18,607	311,276	0
	00o	3,953	155,985	0	0	471	156,843	542,589	859,841	196
	00n	256,910	0	0	0	204,007	789	10,139	471,845	0
*,** 1,2-Dichloroethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	59,314,824	16,921,135	32,535,232	787,622	74,650,467	1,630,158	1,325,188	187,164,626	23,294
	98o	435,903,074	11,350,396	49,197,699	194,842	59,612,529	1,892,410	833,090	558,984,040	69,869
	98n	0	0	2,617	338	1,389,729	4,384	59,112	1,456,180	5
	99o	397,977,917	14,982,020	35,619,138	266,614	75,760,698	2,137,851	1,067,395	527,811,633	11,336
	99n	213	0	1,707	47,058	3,251,128	144,444	68,188	3,512,738	0
	00o	434,205,728	12,290,493	39,223,474	347,949	289,745,796	2,222,239	951,825	778,987,504	9,247
	00n	76,950	0	0	73,373	2,662,723	264,372	175,704	3,253,122	43
1,2-Dichloroethylene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	310,000	6,100	2,871,400	0	4,680,089	1,984	8,761	7,878,334	121
	98o	1,560,000	1,617,199	621,000	0	3,946,600	2,803	5,304	7,752,906	143
	98n	0	0	0	0	1,163,150	0	631	1,163,781	0
	99o	4,250,000	1,463,455	313,000	0	14,301,329	7,070	7,511	20,342,365	121
	99n	255,988	0	0	411,928	1,745,805	165	1,279	2,415,165	10
	00o	420,000	345,271	311,600	0	10,654,635	6,378	4,308	11,742,192	542
	00n	65,971	0	0	337,796	262,574	202	223	666,766	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number	Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
1717-00-6	1,1-Dichloro-1-fluoroethane (HCFC-141b)	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	296	11,678,931	580	26	35,767	11,715,304	165,777	11,881,081
		98o	235	7,973,111	54	0	30,256	8,003,421	230,925	8,234,346
		98n	11	31,419	0	0	0	31,419	1,096	32,515
		99o	229	7,974,045	419	0	20,128	7,994,592	299,820	8,294,412
		99n	11	23,516	0	0	0	23,516	1,662	25,178
		00o	233	8,020,816	173	0	22,571	8,043,560	292,987	8,336,546
		00n	12	13,065	0	0	0	13,065	250	13,315
75-43-4	Dichlorofluoromethane (HCFC-21)	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	4	173,117	2	0	0	173,119	31,000	204,119
		98o	3	129,467	0	0	0	129,467	8,975	138,442
		98n	4	4	0	0	0	4	9	13
		99o	4	128,659	0	0	0	128,659	10,910	139,569
		99n	2	5	0	0	75,231	75,236	0	75,236
		00o	4	123,309	0	0	0	123,309	10,570	133,879
		00n	3	5	0	0	37,076	37,081	0	37,081
75-09-2	*,** Dichloromethane	88	1,675	129,124,529	349,960	1,478,833	157,156	131,110,478	7,806,328	138,916,806
		95	1,012	58,305,923	28,620	1,140,335	2,064	59,476,942	180,137	59,657,079
		98o	644	40,410,952	15,492	456,962	173,592	41,056,998	262,770	41,319,768
		98n	198	469,904	262	33,702	10,127	513,995	99,836	613,831
		99o	539	35,710,424	12,056	107,386	8,344	35,838,210	153,884	35,992,094
		99n	163	211,686	16	59,473	53,605	324,780	383,840	708,620
		00o	482	30,635,855	10,016	108,170	747,966	31,502,007	258,733	31,760,740
		00n	151	146,613	276	91,639	90,147	328,675	57,708	386,383
127564-92-5	Dichloropentafluoropropane	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	No reports							
		98o	1	6,520	0	0	0	6,520	8,900	15,420
		98n	No reports							
		99o	1	9,890	0	0	0	9,890	4,600	14,490
		99n	No reports							
		00o	1	11,560	0	0	0	11,560	4,600	16,160
		00n	No reports							
13474-88-9	1,1-Dichloro-1,2,2,3,3-pentafluoropropane (HCFC-225cc)	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	No reports							
		98o	No reports							
		98n	No reports							
		99o	No reports							
		99n	No reports							
		00o	No reports							
		00n	No reports							
111512-56-2	1,1-Dichloro-1,2,3,3,3-pentafluoropropane (HCFC-225eb)	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	No reports							
		98o	No reports							
		98n	No reports							
		99o	No reports							
		99n	No reports							
		00o	No reports							
		00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR· not reportable (chemicals added to the TRI list after 1988)
DC: definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
1,1-Dichloro-1-fluoroethane (HCFC-141b)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	5,429,772	381,393	0	99,548	2,018,829	846,290	11,819,544	20,595,376	38,945
	98o	155,007	147,221	0	660,660	801,429	421,550	8,023,510	10,209,377	75,867
	98n	357,028	3,660	0	148	271,622	4,671	32,162	669,291	0
	99o	176,231	186,250	0	751,731	993,727	846,854	8,324,068	11,278,861	0
	99n	274,970	4,238	0	1,379	238,799	31,708	22,740	573,834	0
	00o	213,736	177,464	0	575,302	1,498,231	1,103,560	8,229,329	11,797,622	0
	00n	426,388	0	2,121	2,629	320,910	8,366	12,553	772,967	0
Dichlorofluoromethane (HCFC-21)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	7,200	1,586	23,800	204,492	237,078	0
	98o	0	0	0	0	0	5,487	138,067	143,554	0
	98n	0	0	0	0	288,607	183	13	288,803	0
	99o	0	0	0	0	16,463	13,104	139,655	169,222	0
	99n	0	0	0	0	21,850	0	75,234	97,084	0
	00o	0	0	0	0	0	60	133,879	133,939	0
	00n	0	0	0	0	44,583	168	37,083	81,834	0
*,**Dichloromethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	84,723,606	14,116,539	5,240,223	3,234,456	25,614,610	11,966,476	59,549,789	204,445,699	72,659
	98o	136,303,643	15,214,012	8,885,675	3,022,379	26,836,797	14,261,243	41,317,411	245,841,160	102,499
	98n	18,386,857	2,100,136	728	5,286,006	2,646,686	7,366,736	554,645	36,341,794	257
	99o	149,800,223	11,319,120	7,937,093	4,696,123	455,912,875	15,168,472	35,644,487	680,478,393	700,400
	99n	10,282,608	1,252,884	2,351	10,060,265	5,022,652	5,186,585	481,507	32,288,852	5,557
	00o	138,769,954	10,556,952	6,221,624	3,132,659	102,869,203	15,585,426	30,831,563	307,967,381	801,840
	00n	8,697,312	609,393	814,791	9,035,912	6,891,494	6,868,188	863,905	33,780,995	3,550
Dichloropentafluoropropane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	0	0	0	0	0	8,900	6,500	15,400	0
	98n	No reports								
	99o	0	0	0	0	0	4,600	9,900	14,500	0
	99n	No reports								
	00o	0	0	0	0	0	4,600	11,000	15,600	0
	00n	No reports								
1,1-Dichloro-1,2,2,3,3-pentafluoropropane (HCFC-225cc)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
1,1-Dichloro-1,2,3,3,3-pentafluoropropane (HCFC-225eb)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								

Note Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

CAS Number	Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	On-site Releases: Surface Water Discharges Pounds	On-site Releases: Underground Injection Pounds	On-site Releases: Releases to Land Pounds	On-site Releases: Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
422-44-6	**1,2-Dichloro-1,1,2,3,3-penta-fluoropropane (HCFC-225bb)**	**88**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**
		95	**No reports**							
		98o	**No reports**							
		98n	**No reports**							
		99o	**No reports**							
		99n	**No reports**							
		00o	**No reports**							
		00n	**No reports**							
431-86-7	1,2-Dichloro-1,1,3,3,3-penta-fluoropropane (HCFC-225da)	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	No reports							
		98o	No reports							
		98n	No reports							
		99o	No reports							
		99n	No reports							
		00o	No reports							
		00n	No reports							
507-55-1	**1,3-Dichloro-1,1,2,2,3-penta-fluoropropane (HCFC-225cb)**	**88**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**
		95	**1**	**255**	**0**	**0**	**0**	**255**	**0**	**255**
		98o	**3**	**69,043**	**0**	**0**	**0**	**69,043**	**0**	**69,043**
		98n	**1**	**1,000**	**0**	**0**	**0**	**1,000**	**0**	**1,000**
		99o	**2**	**42,310**	**0**	**0**	**0**	**42,310**	**0**	**42,310**
		99n	**1**	**1,000**	**0**	**0**	**0**	**1,000**	**0**	**1,000**
		00o	**2**	**23,573**	**0**	**0**	**0**	**23,573**	**0**	**23,573**
		00n	**No reports**							
136013-79-1	1,3-Dichloro-1,1,2,3,3-penta-fluoropropane (HCFC-225ea)	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	No reports							
		98o	No reports							
		98n	No reports							
		99o	No reports							
		99n	No reports							
		00o	No reports							
		00n	No reports							
128903-21-9	**2,2-Dichloro-1,1,1,3,3-penta-fluoropropane (HCFC-225aa)**	**88**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**
		95	**No reports**							
		98o	**No reports**							
		98n	**No reports**							
		99o	**No reports**							
		99n	**No reports**							
		00o	**No reports**							
		00n	**No reports**							
422-48-0	2,3-Dichloro-1,1,1,2,3-penta-fluoropropane (HCFC-225ba)	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	No reports							
		98o	No reports							
		98n	No reports							
		99o	No reports							
		99n	No reports							
		00o	No reports							
		00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
		On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
1,2-Dichloro-1,1,2,3,3-penta-fluoropropane (HCFC-225bb)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
1,2-Dichloro-1,1,3,3,3-penta-fluoropropane (HCFC-225da)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
1,3-Dichloro-1,1,2,2,3-penta-fluoropropane (HCFC-225cb)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	100	0	0	0	0	0	400	500	0
	98o	4,747	0	0	0	0	0	69,043	73,790	7,000
	98n	0	500	0	0	0	0	1,275	1,775	0
	99o	39,675	0	0	390	0	1,700	42,310	84,075	0
	99n	0	450	0	0	0	0	850	1,300	0
	00o	12,000	6,914	0	4	0	0	23,555	42,473	0
	00n	No reports								
1,3-Dichloro-1,1,2,3,3-penta-fluoropropane (HCFC-225ea)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
2,2-Dichloro-1,1,1,3,3-penta-fluoropropane (HCFC-225aa)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
2,3-Dichloro-1,1,1,2,3-penta-fluoropropane (HCFC-225ba)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								

Note. Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	On-site Releases: Surface Water Discharges Pounds	On-site Releases: Underground Injection Pounds	On-site Releases: Releases to Land Pounds	On-site Releases: Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
422-56-0		3,3-Dichloro-1,1,1,2,2-penta-fluoropropane (HCFC-225ca)	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	255	0	0	0	255	0	255
			98o	3	56,258	0	0	0	56,258	0	56,258
			98n	1	1,000	0	0	0	1,000	0	1,000
			99o	2	35,012	0	0	0	35,012	0	35,012
			99n	1	1,000	0	0	0	1,000	0	1,000
			00o	2	18,693	0	0	0	18,693	0	18,693
			00n	No reports							
97-23-4	*	Dichlorophene	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
120-83-2		2,4-Dichloro-phenol	88	8	1,403	107	17,700	2	19,212	350	19,562
			95	3	3,580	245	15,900	0	19,725	0	19,725
			98o	5	490	0	9,000	0	9,490	0	9,490
			98n	3	108	0	0	0	108	0	108
			99o	4	465	30	9,700	1	10,196	0	10,196
			99n	3	57	1	0	0	58	19	77
			00o	3	849	51	5,700	0	6,600	0	6,600
			00n	3	0	0	0	0	0	0	0
78-87-5	*	1,2-Dichloro-propane	88	12	1,395,304	23,785	0	3,400	1,422,489	1,131	1,423,620
			95	11	616,470	4,344	0	20	620,834	1,371	622,205
			98o	11	298,150	1,122	0	32	299,304	267	299,571
			98n	4	8	0	0	0	8	0	8
			99o	11	249,655	9,242	0	30	258,927	6,856	265,783
			99n	4	23	1	0	0	24	13	37
			00o	11	263,838	431	0	382	264,651	5	264,656
			00n	6	108	5	5	0	118	1	119
10061-02-6	**	trans-1,3-Dichloro-propene	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	256	0	0	0	256	0	256
			98o	3	1,670	0	0	1	1,671	0	1,671
			98n	1	70	0	0	0	70	0	70
			99o	6	512	0	0	0	512	0	512
			99n	1	85	0	0	0	85	0	85
			00o	5	561	0	0	0	561	0	561
			00n	2	60	0	0	0	60	0	60
78-88-6	*	2,3-Dichloro-propene	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	5	4,253	0	0	0	4,253	0	4,253
			98o	5	612	490	0	0	1,102	1,200	2,302
			98n	1	32	0	0	0	32	0	32
			99o	5	357	900	0	0	1,257	0	1,257
			99n	No reports							
			00o	5	315	290	0	200	805	0	805
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

	Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
	3,3-Dichloro-	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1,1,1,2,2-penta-	95	60	0	0	0	0	0	300	360	0
	fluoropropane	98o	3,851	0	0	0	0	0	56,558	60,409	5,700
	(HCFC-225ca)	98n	0	410	0	0	0	0	1,040	1,450	0
		99o	32,023	0	0	400	0	1,400	35,013	68,836	0
		99n	0	365	0	0	0	0	1,040	1,405	0
		00o	10,000	4,061	0	4	0	0	18,679	32,744	0
		00n	No reports								
*	Dichlorophene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
	2,4-Dichlorophenol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	1,460	0	3	0	336,936	500	19,720	358,619	0
		98o	1,400	0	3	0	190,400	600	9,435	201,838	0
		98n	0	0	0	48,026	25,817	0	108	73,951	0
		99o	1,100	0	0	0	216,300	0	10,141	227,541	0
		99n	0	0	0	8,497	115,864	181	74	124,616	0
		00o	920	0	3	0	213,267	63	6,645	220,898	0
		00n	0	0	0	0	37,255	809	0	38,064	0
*	1,2-Dichloro-	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	propane	95	56,000,000	0	28,380,000	0	11,573,182	7,768	620,353	96,581,303	1,200
		98o	26,800,000	0	10,700,000	0	15,610,350	1,161,416	301,901	54,573,667	10
		98n	0	0	0	0	689,377	22	4	689,403	0
		99o	9,200,000	0	5,109,000	2	22,414,813	3,604,795	260,891	40,589,501	10
		99n	0	0	0	0	347,173	0	35	347,208	0
		00o	84,350,000	52	15,981,364	93,118	195,413,875	344,044	266,464	296,448,917	0
		00n	0	0	0	0	618,017	786	115	618,918	0
**	trans-1,3-Dichloro-	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	propene	95	0	0	11,000,000	0	0	0	250	11,000,250	0
		98o	7,900	0	5,210,238	9	20,505	430	1,640	5,240,722	0
		98n	0	0	0	0	0	0	70	70	0
		99o	50,000	0	0	180	6,845,015	242	510	6,895,947	0
		99n	0	0	0	0	0	0	85	85	0
		00o	36,000	0	11,328	360	20,005	220	21	67,934	0
		00n	0	0	0	0	0	0	60	60	0
*	2,3-Dichloro-	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	propene	95	6,100,000	1	4,200,000	0	1,960,000	510,000	4,253	12,774,254	0
		98o	960,000	0	1,100,000	0	639,000	1,086,000	1,102	3,786,102	0
		98n	0	0	0	0	73,306	0	32	73,338	0
		99o	2,300,000	0	0	0	3,670,000	410,000	1,290	6,381,290	0
		99n	No reports								
		00o	3,200,000	0	2,217,065	3	6,800,000	330	550,806	12,768,204	0
		00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988).
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
542-75-6	***,****	**1,3-Dichloro-propylene**	**88**	**8**	**54,590**	**250**	**0**	**0**	**54,840**	**0**	**54,840**
			95	**11**	**32,977**	**193**	**0**	**0**	**33,170**	**0**	**33,170**
			98o	**12**	**11,139**	**61**	**0**	**1**	**11,201**	**0**	**11,201**
			98n	**6**	**427**	**0**	**0**	**0**	**427**	**0**	**427**
			99o	**14**	**6,111**	**67**	**0**	**0**	**6,178**	**0**	**6,178**
			99n	**6**	**489**	**1**	**0**	**0**	**490**	**168**	**658**
			00o	**13**	**9,385**	**288**	**2**	**200**	**9,875**	**0**	**9,875**
			00n	**6**	**660**	**0**	**0**	**0**	**660**	**0**	**660**
76-14-2	*	Dichlorotetra-fluoroethane (CFC-114)	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	20	1,017,652	4,936	0	0	1,022,588	136	1,022,724
			98o	14	827,613	5	0	0	827,618	1	827,619
			98n	No reports							
			99o	13	933,663	5	0	0	933,668	0	933,668
			99n	No reports							
			00o	10	917,455	5	0	0	917,460	0	917,460
			00n	2	403	0	0	0	403	0	403
34077-87-7		**Dichlorotri-fluoroethane**	**88**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**
			95	**1**	**1,000**	**0**	**0**	**0**	**1,000**	**0**	**1,000**
			98o	**1**	**1,699**	**0**	**0**	**0**	**1,699**	**0**	**1,699**
			98n	**1**	**5**	**0**	**0**	**0**	**5**	**2**	**7**
			99o	**No reports**							
			99n	**1**	**12**	**0**	**0**	**0**	**12**	**2**	**14**
			00o	**No reports**							
			00n	**No reports**							
90454-18-5		Dichloro-1,1,2-trifluoroethane	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
812-04-4		**1,1-Dichloro-1,2,2-trifluoro-ethane (HCFC-123b)**	**88**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**
			95	**No reports**							
			98o	**No reports**							
			98n	**No reports**							
			99o	**No reports**							
			99n	**No reports**							
			00o	**No reports**							
			00n	**No reports**							
354-23-4		1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a)	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	1	101,118	5	0	0	101,123	0	101,123
			98n	No reports							
			99o	1	107,479	5	0	0	107,484	0	107,484
			99n	No reports							
			00o	1	108,513	5	0	0	108,518	0	108,518
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR: not reportable (chemicals added to the TRI list after 1988)
DC: definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
		On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
*,** 1,3-Dichloro-propylene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	4,892,986	470	11,930,000	123	969,916	2,481	33,404	17,829,380	240
	98o	1,932,000	0	6,000,000	16,645	1,084,262	42,734	10,800	9,086,441	0
	98n	0	0	0	14,109	89,306	80	427	103,922	0
	99o	870,000	0	0	26,166	890,170	120,870	8,687	1,915,893	0
	99n	0	0	0	0	296,500	20	653	297,173	0
	00o	2,943,000	0	24,000,000	191,953	8,072,751	22,308	9,443	35,239,455	0
	00n	0	0	0	0	172,135	882	428	173,445	0
* Dichlorotetra-fluoroethane (CFC-114)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	19,819	14,634	0	0	1,608,479	38,271	1,018,687	2,699,890	0
	98o	231,484	17,299	0	0	1,022,895	39,052	827,470	2,138,200	0
	98n	No reports								
	99o	195,012	13,065	0	0	38,821	130,807	918,710	1,296,415	18,960
	99n	No reports								
	00o	0	7,996	0	0	56,638	103,489	917,607	1,085,730	0
	00n	148,891	0	0	0	13,293	0	403	162,587	0
Dichlorotri-fluoroethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	716,409	0	968	717,377	0
	98o	0	0	0	0	35,000	0	1,699	36,699	0
	98n	0	0	0	0	29,974	0	7	29,981	0
	99o	No reports								
	99n	0	0	0	0	47,879	0	14	47,893	0
	00o	No reports								
	00n	No reports								
Dichloro-1,1,2-trifluoroethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
1,1-Dichloro-1,2,2-trifluoro-ethane (HCFC-123b)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	0	0	0	0	0	0	101,123	101,123	0
	98n	No reports								
	99o	0	0	0	0	0	0	107,484	107,484	0
	99n	No reports								
	00o	0	0	0	0	0	0	108,518	108,518	0
	00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
306-83-2		2,2-Dichloro-1,1,1-trifluoroethane (HCFC-123)	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	12	155,006	251	0	0	155,257	0	155,257
			98o	14	212,316	10	0	0	212,326	0	212,326
			98n	3	457	0	0	0	457	226	683
			99o	11	104,470	5	0	0	104,475	0	104,475
			99n	2	977	0	0	0	977	0	977
			00o	10	130,610	755	0	0	131,365	0	131,365
			00n	2	358	0	0	0	358	0	358
62-73-7	*,**	Dichlorvos	88	7	1,050	0	0	0	1,050	505	1,555
			95	4	255	5	0	0	260	250	510
			98o	4	255	5	0	0	260	0	260
			98n	1	0	0	0	0	0	9	9
			99o	4	255	5	0	0	260	0	260
			99n	2	3	1	0	0	4	5	9
			00o	5	260	5	0	0	265	0	265
			00n	1	0	0	0	0	0	0	0
51338-27-3	*	Diclofop methyl	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
115-32-2	*	Dicofol	88	8	1,343	0	0	0	1,343	15,786	17,129
			95	4	750	0	0	0	750	250	1,000
			98o	4	1,000	0	0	0	1,000	0	1,000
			98n	No reports							
			99o	5	1,008	0	0	0	1,008	0	1,008
			99n	1	3	0	0	0	3	0	3
			00o	5	1,000	0	0	0	1,000	0	1,000
			00n	1	0	0	0	0	0	0	0
77-73-6		Dicyclopentadiene	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	72	340,455	5,464	0	475	346,394	6,888	353,282
			98o	86	350,062	14,943	0	597	365,602	6,162	371,764
			98n	3	15	0	1,081,201	0	1,081,216	0	1,081,216
			99o	92	351,535	11,817	0	10	363,362	2,906	366,268
			99n	5	281	1	973,928	0	974,210	256	974,466
			00o	93	282,249	12,706	0	29	294,984	1,469	296,453
			00n	4	259	0	813,332	0	813,591	25	813,616
1464-53-5	**	Diepoxybutane	88	No reports							
			95	No reports							
			98o	No reports							
			98n	1	70	0	0	0	70	0	70
			99o	No reports							
			99n	1	0	0	0	0	0	0	0
			00o	No reports							
			00n	1	0	0	0	0	0	0	0

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
2,2-Dichloro-1,1,1-trifluoroethane (HCFC-123)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	253,000	1,304	0	0	18,400	24,465	155,218	452,387	0
	98o	0	0	0	0	41,354	6,066	210,718	258,138	955
	98n	0	0	0	0	32,848	0	683	33,531	0
	99o	0	0	0	0	32,559	15,178	104,120	151,857	0
	99n	0	0	0	0	0	0	977	977	0
	00o	0	0	0	0	4,330	10,996	129,710	145,036	1,500
	00n	0	0	0	0	0	0	358	358	0
*,** Dichlorvos	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	33	0	0	297	10	536	550	1,426	24
	98o	0	0	0	0	11	1,130	508	1,649	0
	98n	0	0	0	0	14,957	0	9	14,966	0
	99o	0	0	0	0	14	1,984	260	2,258	0
	99n	0	97	0	0	26,895	0	5	26,997	0
	00o	0	3	0	328	16	2,195	261	2,803	0
	00n	0	0	0	0	12,908	237	0	13,145	0
* Diclofop methyl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
* Dicofol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	150	0	0	0	0	95	282	527	0
	98o	0	0	0	0	0	895	229	1,124	0
	98n	No reports								
	99o	148	0	0	0	0	1,166	131	1,445	0
	99n	0	0	0	0	28,375	0	3	28,378	0
	00o	0	0	0	0	0	1,335	113	1,448	0
	00n	0	0	0	0	25,898	20	0	25,918	0
Dicyclopentadiene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	514,277	139,273	1,782,272	635,023	471,016	201,368	348,234	4,091,463	306
	98o	457,481	54,182	1,055,862	790,262	535,711	226,565	401,577	3,521,640	7,570
	98n	0	0	0	0	22,604	0	1,081,217	1,103,821	0
	99o	341,739	31,448	4,454,966	684,673	713,953	93,130	371,683	6,691,592	3,506
	99n	0	0	0	333,931	459,410	0	974,025	1,767,366	0
	00o	502,962	270,004	3,656,320	629,690	420,660	178,807	296,841	5,955,284	1,446
	00n	0	0	0	0	985,294	0	813,467	1,798,761	0
** Diepoxybutane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	0	0	0	148,733	0	0	70	148,803	0
	99o	No reports								
	99n	0	0	0	0	11,634	0	0	11,634	0
	00o	No reports								
	00n	0	0	0	0	14,419	772	0	15,191	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
111-42-2		Diethanolamine	88	333	642,418	438,213	238,317	133,456	1,452,404	376,037	1,828,441
			95	350	369,625	287,582	18,502	40,399	716,108	456,391	1,172,499
			98o	332	436,529	63,158	24,000	113,340	637,027	208,501	845,528
			98n	99	1,256	0	316,517	169,345	487,118	3,653	490,771
			99o	319	374,308	35,086	26,905	79,789	516,088	204,144	720,232
			99n	98	1,836	0	327,701	65,000	394,537	33,134	427,671
			00o	311	290,339	150,275	0	117,286	557,900	450,497	1,008,397
			00n	95	716	0	258,865	14,600	274,181	4,704	278,885
38727-55-8	*	Diethatyl ethyl	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
117-81-7	*,**	Di(2-ethylhexyl) phthalate	88	304	1,217,329	2,781	3,091	20,748	1,243,949	3,630,612	4,874,561
			95	320	504,667	921	0	19,705	525,293	3,042,589	3,567,882
			98o	306	217,555	669	0	24,184	242,408	1,198,151	1,440,559
			98n	59	1,986	0	0	0	1,986	1,798	3,784
			99o	292	229,677	2,629	0	4,685	236,991	1,017,811	1,254,802
			99n	67	960	251	0	27,649	28,860	9,247	38,107
			00o	301	240,424	592	0	6,188	247,204	1,112,315	1,359,519
			00n	58	1,172	5	250	0	1,427	503	1,930
64-67-5	**	Diethyl sulfate	88	24	10,627	0	0	250	10,877	0	10,877
			95	31	6,978	0	0	0	6,978	250	7,228
			98o	33	6,188	0	0	0	6,188	177	6,365
			98n	2	0	0	0	0	0	0	0
			99o	29	3,727	0	0	0	3,727	34,518	38,245
			99n	2	10	0	0	0	10	0	10
			00o	31	7,863	0	0	0	7,863	621	8,484
			00n	2	10	0	0	0	10	0	10
35367-38-5	*	Diflubenzuron	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	2	0	0	0	0	0	0	0
			98n	No reports							
			99o	2	0	0	0	0	0	0	0
			99n	No reports							
			00o	2	0	0	0	0	0	0	0
			00n	No reports							
101-90-6	**	Diglycidyl resorcinol ether	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	2	20	0	0	0	20	0	20
			98n	1	0	0	0	0	0	0	0
			99o	2	20	0	0	0	20	0	20
			99n	1	0	0	0	0	0	0	0
			00o	3	10	0	0	0	10	0	10
			00n	1	0	0	0	0	0	0	0

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
Diethanolamine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	23,518	160,987	102,766	732,863	2,828,593	1,617,435	1,137,284	6,603,446	25,342
	98o	3	289,382	280,874	119,918	2,935,508	2,570,010	2,592,385	8,788,080	80
	98n	56,215	0	0	755,972	21,411	4,286	493,747	1,331,631	0
	99o	0	72,617	509,443	354,310	2,798,392	1,477,487	1,094,260	6,306,509	55,474
	99n	0	5	0	34,183	32,523	14,749	427,166	508,626	0
	00o	36,064	115,049	602,968	130,432	11,758,348	1,350,711	2,079,072	16,072,644	5,077
	00n	0	0	0	3,766	60,058	6,258	279,731	349,813	0
* Diethatyl ethyl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
*,** Di(2-ethylhexyl) phthalate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	2,644,796	4,057,967	116,013	258,725	557,557	357,115	3,678,363	11,670,536	341
	98o	4,997,256	1,879,610	464,843	222,093	403,536	272,281	1,174,668	9,414,287	561
	98n	0	0	0	1,452,492	0	2,318	1,614	1,456,424	0
	99o	3,861,430	3,153,512	344,691	193,711	185,510	198,431	1,164,639	9,101,924	7,024
	99n	0	0	0	9,101	179,924	1,961	33,064	224,050	3,117
	00o	3,794,801	3,249,455	481,682	225,642	4,099,569	148,420	1,352,304	13,351,873	1,458
	00n	0	0	0	9,459	279,363	1,899	776	291,497	0
** Diethyl sulfate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	6,400,000	0	415	3,370	4,702	7,131	6,415,618	0
	98o	0	0	0	6,887,586	4,488	2,460	6,508	6,901,042	5
	98n	0	0	0	50	1	50	1	102	0
	99o	0	0	0	7,659,130	3,704	459	42,667	7,705,960	0
	99n	0	0	0	1,780	1	0	1	1,782	0
	00o	0	0	0	5,843,600	1,328	4,879	10,519	5,860,326	0
	00n	0	0	0	200	0	0	201	401	0
* Diflubenzuron	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	0	0	0	0	0	0	0	0	0
	99n	No reports								
	00o	0	0	0	0	0	0	0	0	0
	00n	No reports								
** Diglycidyl resorcinol ether	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	0	0	0	300	0	0	6	306	0
	98n	0	0	0	0	0	0	0	0	0
	99o	0	0	0	1,100	0	0	6	1,106	0
	99n	0	0	0	0	0	0	0	0	0
	00o	0	0	0	0	0	0	1	1	0
	00n	0	0	0	0	0	0	0	0	0

Note Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
94-58-6	**	**Dihydrosafrole**	**88**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**
			95	**2**	**255**	**0**	**0**	**0**	**255**	**0**	**255**
			98o	**4**	**12,018**	**0**	**0**	**0**	**12,018**	**0**	**12,018**
			98n	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
			99o	**3**	**268**	**0**	**0**	**0**	**268**	**0**	**268**
			99n	**3**	**5**	**0**	**0**	**0**	**5**	**167**	**172**
			00o	**3**	**260**	**0**	**0**	**0**	**260**	**0**	**260**
			00n	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
--		Diisocyanates	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1,107	453,411	1,370	0	31,977	486,758	599,218	1,085,976
			98o	1,393	447,589	28	0	158,920	606,537	1,061,689	1,668,226
			98n	17	750	0	0	900,000	900,750	2,760	903,510
			99o	1,406	278,853	21	0	198,911	477,785	1,002,403	1,480,188
			99n	20	1,565	1	0	514,005	515,571	39,567	555,138
			00o	1,400	365,357	16	0	227,697	593,070	1,889,129	2,482,199
			00n	18	348	5	0	641,159	641,512	719	642,231
55290-64-7	*	**Dimethipin**	**88**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**	**NR**
			95	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
			98o	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
			98n	**No reports**							
			99o	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
			99n	**No reports**							
			00o	**2**	**250**	**0**	**0**	**0**	**250**	**0**	**250**
			00n	**No reports**							
60-51-5	*	Dimethoate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	4	270	5	0	250	525	1,500	2,025
			98o	6	42	5	0	19,975	20,022	0	20,022
			98n	2	15	0	0	0	15	69	84
			99o	5	27	5	0	0	32	0	32
			99n	4	24	0	0	0	24	177	201
			00o	5	22	5	0	0	27	0	27
			00n	4	14	250	0	0	264	0	264
119-90-4	**	**3,3'-Dimethoxy-benzidine**	**88**	**No reports**							
			95	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
			98o	**No reports**							
			98n	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
			99o	**No reports**							
			99n	**3**	**7**	**1**	**0**	**0**	**8**	**162**	**170**
			00o	**No reports**							
			00n	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
20325-40-0	**	3,3'-Dimethoxy-benzidine dihydrochloride	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	5	10	0	0	0	10	0	10
			98o	7	0	0	0	0	0	0	0
			98n	No reports							
			99o	8	12	220	0	0	232	0	232
			99n	No reports							
			00o	7	16	36	0	0	52	0	52
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
** Dihydrosafrole	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	10	999	0	1,009	0
	98o	0	0	0	0	0	10	12,028	12,038	0
	98n	0	0	0	0	0	0	0	0	0
	99o	0	0	0	0	0	10	78	88	0
	99n	0	0	0	0	189,324	0	171	189,495	0
	00o	0	0	0	0	0	5	83	88	0
	00n	0	0	0	0	106,546	787	0	107,333	0
Diisocyanates	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	816,798	343,867	143,840	343,308	710,457	1,182,587	1,039,906	4,580,763	4,131
	98o	1,352,830	450,903	573,125	608,093	1,919,545	1,562,728	1,281,385	7,748,609	9,892
	98n	0	0	0	1,352,236	1,247,948	782	903,028	3,503,994	0
	99o	112,052	559,488	125,596	549,383	2,046,547	1,684,680	1,443,134	6,520,880	20,376
	99n	0	0	0	0	4,229,041	970	557,229	4,787,240	0
	00o	145,962	357,797	195,025	877,627	704,373	1,469,395	2,410,363	6,160,542	7,302
	00n	0	0	0	260	1,783,693	9,359	641,984	2,435,296	0
* Dimethipin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	0	0	0	0	0	0	0	0	0
	99n	No reports								
	00o	0	0	0	0	0	2,596	229	2,825	0
	00n	No reports								
* Dimethoate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	200	0	0	0	0	242	1,900	2,342	0
	98o	433	0	0	0	0	4,105	27,957	32,495	0
	98n	0	0	0	0	63,138	0	84	63,222	0
	99o	0	0	0	0	0	8,691	4,865	13,556	0
	99n	0	0	0	0	210,152	0	202	210,354	0
	00o	0	0	0	0	0	4,731	5,212	9,943	0
	00n	0	0	0	10,000	173,804	10,064	34	193,902	0
** 3,3'-Dimethoxy-benzidine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	No reports								
	98n	0	0	0	0	0	0	0	0	0
	99o	No reports								
	99n	0	0	0	0	178,511	0	164	178,675	0
	00o	No reports								
	00n	0	0	0	0	103,413	781	0	104,194	0
** 3,3'-Dimethoxy-benzidine dihydrochloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	50	1	10	61	0
	98o	0	0	0	0	15	0	0	15	0
	98n	No reports								
	99o	0	0	0	0	1,115	0	232	1,347	0
	99n	No reports								
	00o	0	0	0	0	153	0	52	205	0
	00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number	Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
111984-09-9 **	3,3'-Dimethoxy-benzidine hydrochloride	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	No reports							
		98o	No reports							
		98n	No reports							
		99o	No reports							
		99n	No reports							
		00o	No reports							
		00n	No reports							
124-40-3	Dimethylamine	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	72	456,761	26,490	60,250	3,140	546,641	38,146	584,787
		98o	76	446,085	35,629	26,250	3,788	511,752	119	511,871
		98n	5	892	0	0	0	892	8	900
		99o	74	416,500	30,068	24,250	2,735	473,553	18	473,571
		99n	7	567	1	0	0	568	422	990
		00o	78	387,318	22,005	16,200	3,440	428,963	2,571	431,534
		00n	8	2,800	5	0	0	2,805	1,010	3,815
2300-66-5 *	Dimethylamine dicamba	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	3	505	0	0	0	505	154	659
		98o	3	250	0	0	0	250	0	250
		98n	No reports							
		99o	5	250	0	0	0	250	0	250
		99n	No reports							
		00o	7	255	0	250	0	505	0	505
		00n	No reports							
60-11-7 **	4-Dimethylamino azobenzene	88	No reports							
		95	No reports							
		98o	No reports							
		98n	No reports							
		99o	No reports							
		99n	No reports							
		00o	No reports							
		00n	1	0	0	0	0	0	0	0
121-69-7	N,N-Dimethyl-aniline	88	20	98,905	19,967	0	250	119,122	772	119,894
		95	21	36,932	388	0	0	37,320	465	37,785
		98o	21	32,294	850	0	0	33,144	7,523	40,667
		98n	1	0	0	0	0	0	0	0
		99o	21	27,624	349	0	0	27,973	2,577	30,550
		99n	3	5	0	0	0	5	167	172
		00o	17	20,087	719	0	0	20,806	142	20,948
		00n	3	1	0	0	0	1	0	1
119-93-7 **	3,3'-Dimethyl-benzidine	88	No reports							
		95	No reports							
		98o	No reports							
		98n	2	10	0	0	0	10	0	10
		99o	No reports							
		99n	4	17	1	0	0	18	171	189
		00o	No reports							
		00n	4	10	0	0	0	10	5	15

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
**	3,3'-Dimethoxy-benzidine hydrochloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
	Dimethylamine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	1,095,202	0	21,170	1,800	2,157,170	224,513	582,484	4,082,339	0
		98o	574,603	0	28,500	1,600	3,739,186	450,423	510,977	5,305,289	65
		98n	0	0	0	149,823	231,726	50	1,199	382,798	0
		99o	716,804	0	8,510	6,127	2,885,224	537,560	476,506	4,630,731	77
		99n	0	0	0	0	432,882	750	1,228	434,860	0
		00o	413,215	294	10,330	3,100	4,439,603	823,756	431,762	6,122,060	0
		00n	0	0	1,659	733	452,084	332	2,893	457,701	0
*	Dimethylamine dicamba	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	7,981	0	0	0	0	0	803	8,784	0
		98o	0	0	0	0	0	0	88	88	0
		98n	No reports								
		99o	0	0	0	0	0	0	32	32	0
		99n	No reports								
		00o	0	0	0	0	0	0	500	500	0
		00n	No reports								
**	4-Dimethylamino-azobenzene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	0	0	0	0	13,740	781	0	14,521	0
	N,N-Dimethyl-aniline	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	50,535	0	0	745,242	12,768	201,372	107,732	1,117,649	0
		98o	46,000	21,000	0	807,221	19,620	166,522	31,090	1,091,453	0
		98n	0	0	0	0	0	0	0	0	0
		99o	52,678	19,000	33,536	703,600	23,751	167,707	27,833	1,028,105	2
		99n	0	0	0	0	148,990	0	172	149,162	0
		00o	43,000	0	0	52,696	28,226	47,290	21,035	192,247	0
		00n	0	0	0	0	101,873	43	1	101,917	0
**	3,3'-Dimethyl-benzidine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	0	0	0	505	48,005	0	5	48,515	0
		99o	No reports								
		99n	0	0	0	0	207,475	146	173	207,794	0
		00o	No reports								
		00n	0	0	0	1,288	148,615	0	4	149,907	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
612-82-8	**	3,3'-Dimethyl-benzidine dihydrochloride	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
41766-75-0	**	3,3'-Dimethyl-benzidine dihydrofluoride	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
79-44-7	**	Dimethylcarbamyl chloride	88	No reports							
			95	No reports							
			98o	1	98	0	0	0	98	0	98
			98n	1	0	0	0	0	0	0	0
			99o	1	90	0	0	0	90	0	90
			99n	3	9	1	0	0	10	173	183
			00o	1	102	0	0	0	102	0	102
			00n	3	0	0	0	0	0	0	0
2524-03-0		Dimethyl chloro-thiophosphate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	10	0	51,677	20	51,707	0	51,707
			98o	3	77	0	4,300	0	4,377	0	4,377
			98n	No reports							
			99o	No reports							
			99n	1	2	1	0	0	3	4	7
			00o	No reports							
			00n	No reports							
68-12-2	*	N,N-Dimethyl-formamide	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	143	2,352,993	73,106	1,099,000	1,710	3,526,809	286,326	3,813,135
			98o	170	987,634	43,057	272,325	14,976	1,317,992	662,758	1,980,750
			98n	45	2,267	0	11,857	0	14,124	720	14,844
			99o	172	769,633	28,303	127,125	5	925,066	732,291	1,657,357
			99n	42	8,887	1	0	0	8,888	84,778	93,666
			00o	171	725,943	20,506	82,405	1,000	829,854	1,742,774	2,572,628
			00n	46	4,387	0	27,579	0	31,966	7,989	39,955
57-14-7	*,**	1,1-Dimethyl hydrazine	88	4	4,323	10	0	0	4,333	8,855	13,188
			95	4	299	0	0	0	299	5	304
			98o	4	496	0	0	0	496	0	496
			98n	1	0	0	0	0	0	0	0
			99o	4	408	0	0	0	408	7	415
			99n	3	25	1	0	0	26	557	583
			00o	3	365	0	0	0	365	0	365
			00n	4	53	0	0	0	53	72	125

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

	Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
**	3,3'-Dimethyl-benzidine dihydrochloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
**	3,3'-Dimethyl-benzidine dihydrofluoride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
**	Dimethylcarbamyl chloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	0	0	0	0	27,113	0	98	27,211	0
		98n	0	0	0	0	0	0	0	0	0
		99o	0	0	0	0	42,084	0	90	42,174	0
		99n	0	0	0	0	205,715	0	181	205,896	0
		00o	0	0	0	0	38,596	0	102	38,698	0
		00n	0	0	0	0	107,182	789	0	107,971	0
	Dimethyl chloro-thiophosphate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	51,727	51,727	0
		98o	0	0	0	0	1,960	0	4,331	6,291	0
		98n	No reports								
		99o	No reports								
		99n	0	0	0	0	16,000	0	1	16,001	0
		00o	No reports								
		00n	No reports								
*	N,N-Dimethyl-formamide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	4,738,418	389,337	8,565,430	3,644,354	14,738,051	3,084,481	3,689,071	38,849,142	245
		98o	9,700,653	260,139	9,778,803	7,724,127	13,669,610	5,247,912	1,587,505	47,968,749	1,449
		98n	78,590	91	0	577,285	345,236	15,918	19,179	1,036,299	0
		99o	8,526,815	190,989	11,042,710	9,649,715	12,205,473	5,406,804	1,672,179	48,694,685	2,065
		99n	337,796	440	0	3,143,031	691,825	3,243,870	80,676	7,497,638	1
		00o	12,933,112	247,006	13,836,066	14,755,068	13,663,417	10,831,191	2,154,755	68,420,615	191
		00n	1,198,928	813	0	2,699,229	658,926	1,151,880	145,883	5,855,659	5
*,**	1,1-Dimethyl hydrazine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	57	0	0	3,639	10	302	4,008	0
		98o	0	0	0	300	1,218	3,913	493	5,924	0
		98n	0	0	0	0	0	0	0	0	0
		99o	0	0	0	320	670	7,687	412	9,089	0
		99n	0	0	0	0	549,099	0	578	549,677	0
		00o	0	0	0	0	1,361	220	368	1,949	0
		00n	0	0	0	0	363,144	781	124	364,049	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
105-67-9	*	2,4-Dimethyl-phenol	88	13	11,588	484	24,703	399	37,174	1,500	38,674
			95	19	52,797	33	79,000	5	131,835	17	131,852
			98o	25	36,023	56	187,076	0	223,155	1,177	224,332
			98n	3	2	0	0	0	2	0	2
			99o	27	32,402	122	156,587	0	189,111	2,202	191,313
			99n	4	37	1	5	0	43	14	57
			00o	30	30,929	414	201,020	0	232,363	1,533	233,896
			00n	4	0	0	0	0	0	0	0
131-11-3	*	Dimethyl phthalate	88	58	535,056	4,335	390	504	540,285	93,358	633,643
			95	90	375,121	275	1,000	5	376,401	2,524	378,925
			98o	102	263,791	627	2,950	827	268,195	37,011	305,206
			98n	24	259	0	0	0	259	2,077	2,336
			99o	97	432,212	805	1,900	7,356	442,273	32,484	474,757
			99n	19	78	1	0	7,658	7,737	6,384	14,121
			00o	104	289,704	852	1,900	8,587	301,043	33,912	334,955
			00n	23	66	0	5	24,498	24,569	1,003	25,572
77-78-1	**	Dimethyl sulfate	88	33	10,806	610	0	50	11,466	0	11,466
			95	40	6,712	1	0	0	6,713	0	6,713
			98o	35	10,831	46	0	0	10,877	1,010	11,887
			98n	1	0	0	0	0	0	0	0
			99o	31	9,828	3	0	0	9,831	0	9,831
			99n	3	45	1	0	0	46	187	233
			00o	33	7,216	22	0	40	7,278	0	7,278
			00n	4	35	0	0	0	35	0	35
99-65-0		m-Dinitrobenzene	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	547	849	0	1,066	2,462	0	2,462
			98o	2	383	517	0	516	1,416	0	1,416
			98n	No reports							
			99o	2	382	442	0	49	873	0	873
			99n	2	3	0	0	0	3	100	103
			00o	2	355	466	0	134	955	0	955
			00n	No reports							
528-29-0		o-Dinitrobenzene	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	65	109	0	136	310	0	310
			98o	2	49	66	0	66	181	0	181
			98n	No reports							
			99o	2	49	63	0	0	112	0	112
			99n	No reports							
			00o	1	45	60	0	0	105	0	105
			00n	No reports							
100-25-4		p-Dinitrobenzene	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	16	30	0	37	83	0	83
			98o	1	13	18	0	18	49	0	49
			98n	No reports							
			99o	1	14	17	0	0	31	0	31
			99n	No reports							
			00o	1	12	81	0	0	93	0	93
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* 2,4-Dimethylphenol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	37,140	30,368	1,573,273	50,362	397,965	75,967	131,351	2,296,426	24
	98o	6,240	93,314	1,491,389	42,851	530,961	29,711	224,073	2,418,539	193
	98n	0	0	0	0	18,158	0	2	18,160	0
	99o	19,796	65,907	2,268,009	20,395	602,750	23,241	189,616	3,189,714	183
	99n	0	0	0	0	140,677	0	45	140,722	0
	00o	8,208	74,248	1,935,017	17,349	725,960	28,862	236,413	3,026,057	29
	00n	0	0	0	0	18,113	922	0	19,035	0
* Dimethyl phthalate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	4,288	800	253,605	76,579	369,897	221,729	378,344	1,305,242	0
	98o	1,300	11	401,458	89,612	1,027,440	23,677	322,344	1,865,842	264
	98n	0	0	0	152,247	104,268	1,810	267	258,592	0
	99o	22,721	274	1,514,650	187,467	1,254,329	18,822	375,832	3,374,095	0
	99n	0	0	0	2,798	456,783	2,066	11,879	473,526	0
	00o	22,397	634	952,968	115,945	880,982	90,503	352,477	2,415,906	0
	00n	0	0	0	3,568	431,588	2,891	24,573	462,620	0
** Dimethyl sulfate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	171,230	1	0	402,841	3	5,815	579,890	0
	98o	0	260,865	32,693	0	221,659	861	10,613	526,691	0
	98n	0	0	0	0	0	0	0	0	0
	99o	0	131,338	0	0	95,710	9,400	9,722	246,170	0
	99n	0	0	0	0	234,930	0	230	235,160	0
	00o	0	62,518	0	0	60,787	212,012	7,226	342,543	40
	00n	0	0	0	0	279,884	781	35	280,700	0
m-Dinitrobenzene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	848,213	0	2,462	850,675	0
	98o	0	0	0	0	516,692	0	1,416	518,108	0
	98n	No reports								
	99o	0	0	0	0	490,539	0	873	491,412	0
	99n	0	0	0	0	124,420	0	102	124,522	0
	00o	0	0	0	0	465,539	473	955	466,967	0
	00n	No reports								
o-Dinitrobenzene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	445,133	0	310	445,443	0
	98o	0	0	0	0	66,089	0	181	66,270	0
	98n	No reports								
	99o	0	0	0	0	62,743	0	112	62,855	0
	99n	No reports								
	00o	0	0	0	0	59,324	61	105	59,490	0
	00n	No reports								
p-Dinitrobenzene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	29,589	0	83	29,672	0
	98o	0	0	0	0	18,024	0	49	18,073	0
	98n	No reports								
	99o	0	0	0	0	17,112	0	31	17,143	0
	99n	No reports								
	00o	0	0	0	0	16,179	17	93	16,289	0
	00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988).
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	On-site Releases: Surface Water Discharges Pounds	On-site Releases: Underground Injection Pounds	On-site Releases: Releases to Land Pounds	On-site Releases: Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
88-85-7	*	Dinitrobutyl phenol	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	5	879	2	0	0	881	0	881
			98o	5	1,051	0	0	0	1,051	6,843	7,894
			98n	2	6	0	0	0	6	45	51
			99o	5	1,005	0	0	50	1,055	16,848	17,903
			99n	1	0	0	0	0	0	0	0
			00o	6	1,207	0	0	0	1,207	8,850	10,057
			00n	2	1	0	0	0	1	0	1
534-52-1	*	4,6-Dinitro-o-cresol	88	10	274	266	0	2	542	46,648	47,190
			95	5	130	0	4,649	0	4,779	7,220	11,999
			98o	7	104	0	0	1,101	1,205	123,944	125,149
			98n	1	130	0	0	9,700	9,830	1,388	11,218
			99o	7	102	0	0	0	102	137,066	137,168
			99n	3	157	0	0	43,655	43,812	23,599	67,411
			00o	9	125	0	0	0	125	114,579	114,704
			00n	2	309	5	250	14,499	15,063	527	15,590
51-28-5	*	2,4-Dinitrophenol	88	11	20,825	98,692	86,200	257	205,974	110,285	316,259
			95	4	112	2,000	0	0	2,112	0	2,112
			98o	6	183	23,617	0	0	23,800	0	23,800
			98n	2	341	0	0	11,000	11,341	1,632	12,973
			99o	6	7	23,287	0	0	23,294	0	23,294
			99n	3	190	0	0	46,938	47,128	26,063	73,191
			00o	6	4	23,287	0	0	23,291	51	23,342
			00n	3	724	5	250	31,156	32,135	1,274	33,409
121-14-2	**	2,4-Dinitrotoluene	88	13	93,257	12,055	106,400	14,961	226,673	124,281	350,954
			95	4	1,874	231	0	0	2,105	94	2,199
			98o	5	1,829	187	0	0	2,016	0	2,016
			98n	8	166	0	0	10,000	10,166	1,408	11,574
			99o	7	1,858	168	0	0	2,026	25,489	27,515
			99n	8	429	1	0	43,420	43,850	23,806	67,656
			00o	6	759	172	0	0	931	17,811	18,742
			00n	10	1,172	5	250	27,609	29,036	1,780	30,816
606-20-2	**	2,6-Dinitrotoluene	88	7	87,597	957	27,000	0	115,554	30,882	146,436
			95	1	469	126	0	0	595	0	595
			98o	1	467	62	0	0	529	0	529
			98n	2	5	0	0	0	5	0	5
			99o	3	593	42	0	0	635	8,663	9,298
			99n	4	67	1	0	15,287	15,355	8,246	23,601
			00o	4	502	27	0	0	529	2,025	2,554
			00n	4	6	5	250	0	261	0	261
25321-14-6		Dinitrotoluene (mixed isomers)	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	6	14,811	284	17,000	0	32,095	6	32,101
			98o	7	13,439	1	36,000	0	49,440	1,402	50,842
			98n	4	0	0	5	0	5	1	6
			99o	14	9,655	0	1,100	0	10,755	316	11,071
			99n	2	2	1	0	0	3	6	9
			00o	17	10,423	4	3,300	696	14,423	22,093	36,516
			00n	2	0	0	0	0	0	0	0

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Dinitrobutyl phenol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	263,629	0	34,226	110	881	298,846	0
	98o	0	0	310,000	0	12,003	0	7,891	329,894	0
	98n	0	0	0	0	47,850	0	51	47,901	0
	99o	0	0	323,000	0	15,011	1,000	17,898	356,909	0
	99n	0	0	0	0	54,836	0	0	54,836	0
	00o	0	0	309,000	0	26,202	75	10,203	345,480	0
	00n	0	0	0	0	73,342	9	1	73,352	0
* 4,6-Dinitro-o-cresol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	844,907	410	18,000	13,950	7,365	884,632	0
	98o	0	0	1,466,262	10,696	31,000	6,029	123,791	1,637,778	0
	98n	0	0	0	0	360	46	11,000	11,406	0
	99o	0	0	1,664,037	165,913	29,000	19,081	124,717	2,002,748	0
	99n	0	0	0	0	68,669	0	67,411	136,080	0
	00o	0	0	1,757,338	58,751	34,000	64,353	114,709	2,029,151	0
	00n	0	0	0	0	41,256	0	15,476	56,732	0
* 2,4-Dinitrophenol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	556,712	9	1,160,000	220	2,103	1,719,044	0
	98o	0	0	562,709	29,118	1,770,236	0	23,800	2,385,863	0
	98n	0	0	0	0	246,877	53	13,191	260,121	0
	99o	0	0	301,737	317,192	1,642,419	72	23,290	2,284,710	0
	99n	0	0	0	0	240,644	0	73,191	313,835	0
	00o	0	0	290,282	58,571	1,094,790	183,793	23,342	1,650,778	0
	00n	0	0	0	0	74,084	0	33,311	107,395	0
** 2,4-Dinitrotoluene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	42,345	9	27,115	1,381	2,200	73,050	0
	98o	0	0	41,135	9,706	53,539	1,100	2,059	107,539	0
	98n	0	0	0	0	107,067	685	12,031	119,783	0
	99o	0	0	32,234	952	40,983	21,382	22,933	118,484	0
	99n	0	0	0	0	1,030,736	0	67,249	1,097,985	0
	00o	0	0	34,248	58	949,197	824	24,289	1,008,616	0
	00n	0	0	0	0	2,186,966	802	30,188	2,217,956	0
** 2,6-Dinitrotoluene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	6,160	1	9,180	118	595	16,054	0
	98o	0	0	0	0	44,509	118	529	45,156	0
	98n	0	0	0	0	3,755	37	1	3,793	0
	99o	0	0	3,451	0	33,205	5,200	825	42,681	0
	99n	0	0	0	0	94,476	0	23,592	118,068	0
	00o	0	0	44,072	76	303,676	110	7,854	355,788	0
	00n	0	0	0	0	25,241	799	37	26,077	0
Dinitrotoluene (mixed isomers)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	9,100	181,321	882,089	32,321	1,104,831	2,500
	98o	0	202,569	0	6	114,686	587,330	50,175	954,766	8,700
	98n	0	0	0	6	86,495	0	4	86,505	0
	99o	0	0	0	0	714,793	806,158	11,486	1,532,437	3,200
	99n	0	0	0	0	143,316	0	3	143,319	0
	00o	0	0	0	0	906,305	1,515,513	35,958	2,457,776	0
	00n	0	0	0	0	82,160	0	0	82,160	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA. not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC- definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
39300-45-3	*	Dinocap	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	1	255	0	0	0	255	0	255
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
123-91-1	**	1,4-Dioxane	88	73	612,633	203,320	0	11,702	827,655	10,954	838,609
			95	54	223,144	216,689	0	5,736	445,569	352,998	798,567
			98o	47	111,761	144,534	0	4,405	260,700	476,533	737,233
			98n	7	836	0	250	10,000	11,086	1,608	12,694
			99o	56	164,563	168,127	0	4,903	337,593	639,854	977,447
			99n	8	320	1	250	48,069	48,640	26,267	74,907
			00o	56	103,530	163,776	0	2,711	270,017	356,770	626,787
			00n	7	366	0	0	15,420	15,786	627	16,413
--	**, ***	Dioxin and dioxin-like compounds	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	NR	NR	NR	NR	NR	NR	NR	NR
			98o	NR	NR	NR	NR	NR	NR	NR	NR
			98n	NR	NR	NR	NR	NR	NR	NR	NR
			99o	NR	NR	NR	NR	NR	NR	NR	NR
			99n	NR	NR	NR	NR	NR	NR	NR	NR
			00o	779	8.678	4.577	0.893	81.036	95.184	118.423	213.606
		In grams	*00o*	*779*	*3,935.584*	*2,075.610*	*405.092*	*36,750.942*	*43,167.227*	*53,706.372*	*96,873.599*
			00n	495	2.827	0.000	0.000	3.233	6.060	0.424	6.484
		In grams	*00n*	*495*	*1,282.191*	*0.024*	*0.100*	*1,466.082*	*2,748.397*	*192.093*	*2,940.490*
957-51-7	*	Diphenamid	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
122-39-4	*	Diphenylamine	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	23	50,706	200	9,060	65	60,031	34,727	94,758
			98o	26	61,958	25	9,665	250	71,898	43,509	115,407
			98n	4	20	0	0	0	20	90	110
			99o	32	51,059	32	5,772	250	57,113	48,556	105,669
			99n	5	13	0	0	10,130	10,143	419	10,562
			00o	27	28,270	33	7,981	250	36,534	28,035	64,569
			00n	5	10	0	5	13,000	13,015	250	13,265

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR: not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information) For dioxin and dioxin-like compounds, applies only to 2,3,7,8-Tetrachlorodibenzo-p-dioxin

*** PBT chemical added to list for 2000 reporting year See Chapter 3 for more information

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Dinocap	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	0	0	0	0	0	109	8	117	0
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
** 1,4-Dioxane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	74,293	11,324	1,975,960	1,196,352	1,019,104	305,315	790,118	5,372,466	229
	98o	1,120,000	4,101	595,806	672,324	1,800,876	418,527	734,717	5,346,351	18
	98n	0	0	0	454,236	26,614	3,549	12,814	497,213	0
	99o	1,519,000	13,401	1,811,182	1,286,086	1,995,984	364,982	983,878	7,974,513	11
	99n	30,078	0	0	225,348	372,025	8,283	74,549	710,283	0
	00o	1,842,597	7,601	3,485,166	1,505,163	1,670,476	387,464	625,994	9,524,461	4
	00n	0	0	2,740	197,597	162,049	196	16,415	378,997	0
, * Dioxin and dioxin-like compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	NR	NR	NR	NR	NR	NR	NR	NR	NR
	98o	NR	NR	NR	NR	NR	NR	NR	NR	NR
	98n	NR	NR	NR	NR	NR	NR	NR	NR	NR
	99o	NR	NR	NR	NR	NR	NR	NR	NR	NR
	99n	NR	NR	NR	NR	NR	NR	NR	NR	NR
	00o	9.809	0.010	0.043	4.398	525.761	71.155	226.592	837.768	59.140
In grams	*00o*	*4,448.559*	*4.433*	*19.698*	*1,994.612*	*238,440.171*	*32,269.679*	*102,762.885*	*379,940.037*	*26,821.006*
	00n	0.000	0.002	0.000	0.000	24.416	0.004	6.498	30.921	0.000
In grams	*00n*	*0.000*	*0.960*	*0.000*	*0.000*	*11,073.184*	*1.850*	*2,947.049*	*14,023.044*	*0.000*
* Diphenamid	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
* Diphenylamine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	976,755	11,600	1,100,115	264,471	46,428	722,296	95,833	3,217,498	0
	98o	199,400	35,131	4,769,102	823,607	21,971	77,905	86,252	6,013,368	5,700
	98n	0	0	0	0	224,324	0	104	224,428	0
	99o	155,450	879	5,216,863	753,487	192,696	84,462	86,365	6,490,202	1
	99n	0	0	0	46,894	205,207	0	10,386	262,487	0
	00o	9,000	595	4,826,849	1,021,087	65,495	81,408	58,397	6,062,831	0
	00n	0	0	0	0	179,335	198	13,191	192,724	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988).
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information) For dioxin and dioxin-like compounds, applies only to 2,3,7,8-Tetrachlorodibenzo-p-dioxin

*** PBT chemical added to list for 2000 reporting year See Chapter 3 for more information

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
122-66-7	**	1,2-Diphenyl-hydrazine	88	No reports							
			95	No reports							
			98o	No reports							
			98n	2	5	0	0	0	5	0	5
			99o	1	5	0	0	0	5	0	5
			99n	1	2	1	0	0	3	4	7
			00o	No reports							
			00n	3	0	0	0	0	0	0	0
2164-07-0	*	Dipotassium endothall	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	2	20	0	0	0	20	0	20
			98n	No reports							
			99o	1	10	0	0	0	10	0	10
			99n	No reports							
			00o	2	20	0	0	0	20	0	20
			00n	No reports							
136-45-8	*	Dipropyl isocin-chomeronate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	2	0	0	0	0	0	0	0
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							
138-93-2	*	Disodium cyano-dithioimido-carbonate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	0	0	0	0	0	0	0
			98o	5	0	0	0	0	0	0	0
			98n	No reports							
			99o	2	0	0	0	0	0	0	0
			99n	No reports							
			00o	4	0	0	0	0	0	0	0
			00n	No reports							
94-11-1	*,**	2,4-D isopropyl ester	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
541-53-7	*	2,4-Dithiobiuret	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	2	11	0	0	0	11	333	344
			00o	No reports							
			00n	1	0	0	0	0	0	0	0

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR: not reportable (chemicals added to the TRI list after 1988)
DC: definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
** 1,2-Diphenyl-hydrazine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	0	0	0	0	5,485	55	1	5,541	0
	99o	0	0	0	0	5,267	53	1	5,321	0
	99n	0	0	0	0	32,000	0	1	32,001	0
	00o	No reports								
	00n	0	0	0	0	12,678	869	0	13,547	0
* Dipotassium endothall	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	0	0	0	0	1,900	5,400	201	7,501	0
	98n	No reports								
	99o	0	0	0	0	0	3,400	400	3,800	0
	99n	No reports								
	00o	0	0	0	0	0	103,424	200	103,624	0
	00n	No reports								
* Dipropyl isocin-chomeronate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	0	0	0	0	0	0	0	0	0
	99n	No reports								
	00o	0	0	0	0	0	0	0	0	0
	00n	No reports								
* Disodium cyano-dithioimido-carbonate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	0	0	0	0	0	0	0	0	0
	99n	No reports								
	00o	0	0	0	0	0	0	0	0	0
	00n	No reports								
*,** 2,4-D isopropyl ester	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
* 2,4-Dithiobiuret	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	0	0	0	0	122,493	0	342	122,835	0
	00o	No reports								
	00n	0	0	0	0	55,816	0	0	55,816	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

					On-site Releases					Off-site Releases	
CAS Number		Chemical	Year	Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
330-54-1	*	Diuron	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	8	2,765	10	0	5	2,780	1,950	4,730
			98o	11	3,323	260	0	0	3,583	14,100	17,683
			98n	1	0	0	0	35,756	35,756	0	35,756
			99o	8	4,919	260	0	0	5,179	0	5,179
			99n	1	0	0	0	0	0	2	2
			00o	9	4,506	255	0	0	4,761	0	4,761
			00n	1	0	0	0	0	0	0	0
2439-10-3	*	Dodine	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	10	0	0	0	10	0	10
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							
120-36-5	*,**	2,4-DP	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	260	0	0	0	260	17	277
			98o	3	0	0	0	0	0	0	0
			98n	No reports							
			99o	5	68	0	0	0	68	0	68
			99n	1	2	0	0	0	2	54	56
			00o	3	0	0	0	0	0	0	0
			00n	No reports							
1320-18-9	*,**	2,4-D propylene glycol butyl ether ester	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							
2702-72-9	*,**	2,4-D sodium salt	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	1	0	30	0	0	30	0	30
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							
106-89-8	*,**	Epichlorohydrin	88	78	707,107	4,917	68,750	2,524	783,298	307	783,605
			95	69	321,450	26,937	0	19,035	367,422	893	368,315
			98o	75	198,155	434	0	2,167	200,756	7,751	208,507
			98n	8	45	0	12,162	0	12,207	8,852	21,059
			99o	73	146,482	305	0	1,745	148,532	2,173	150,705
			99n	9	60	1	0	0	61	719	780
			00o	72	201,004	389	0	3,950	205,343	11,074	216,417
			00n	6	61	0	0	0	61	29	90

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Diuron	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	300	0	0	2	0	5,711	6,568	12,581	0
	98o	250	0	0	0	0	20,767	7,292	28,309	125
	98n	0	0	0	0	0	0	35,756	35,756	0
	99o	250	0	0	0	0	4,336	26,196	30,782	5
	99n	0	0	0	0	18,317	0	2	18,319	0
	00o	250	0	0	0	0	44	4,294	4,588	0
	00n	0	0	0	0	20,836	2	0	20,838	0
* Dodine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	270	5	275	0
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	0	0	0	0	0	0	0	0	0
	99n	No reports								
	00o	0	0	0	0	0	0	0	0	0
	00n	No reports								
*,**2,4-DP	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	5,633	0	0	0	0	11	536	6,180	0
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	0	0	0	0	0	0	68	68	0
	99n	0	0	0	0	9,954	0	56	10,010	0
	00o	0	0	0	0	0	0	0	0	0
	00n	No reports								
*,**2,4-D propylene glycol butyl ether ester	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	0	0	0	0	0	0	0	0	0
	00n	No reports								
*,**2,4-D sodium salt	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	5,139	0	0	5,139	0
	98o	0	0	0	0	4,600	0	0	4,600	0
	98n	No reports								
	99o	0	0	0	0	20,000	0	30	20,030	0
	99n	No reports								
	00o	0	0	0	0	17,700	0	0	17,700	0
	00n	No reports								
*,**Epichlorohydrin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	13,263,282	0	4,331,319	171,461	4,190,667	952,542	343,764	23,253,035	20,516
	98o	10,499,178	17,715	4,809,942	77,141	24,705,268	953,525	201,067	41,263,836	0
	98n	0	0	49,900	8,069	546,631	0	23,091	627,691	0
	99o	11,169,456	0	4,120,790	103,015	32,646,933	489,349	151,387	48,680,930	0
	99n	0	0	303	0	849,911	0	811	851,025	0
	00o	9,730,583	29	4,588,509	120,177	270,321,453	313,841	673,585	285,748,177	383
	00n	0	0	0	0	858,419	820	55	859,294	0

Note. Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
13194-48-4	*	Ethoprop	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	6	506	0	0	174,290	174,796	0	174,796
			98o	6	34	0	0	116,444	116,478	0	116,478
			98n	1	0	0	0	0	0	6	6
			99o	7	1	0	0	121,886	121,887	0	121,887
			99n	1	0	0	0	0	0	27	27
			00o	6	46	0	0	104,984	105,030	0	105,030
			00n	1	0	0	0	0	0	0	0
110-80-5		2-Ethoxyethanol	88	110	2,431,310	120,164	0	52	2,551,526	71,142	2,622,668
			95	40	222,940	891	0	0	223,831	12,595	236,426
			98o	26	88,954	1	0	0	88,955	2,013	90,968
			98n	14	550	0	0	0	550	976	1,526
			99o	25	139,112	377	0	17	139,506	1,000	140,506
			99n	21	1,138	1	0	0	1,139	83,634	84,773
			00o	23	75,325	130	0	0	75,455	849	76,304
			00n	16	51	250	0	10,470	10,771	661	11,432
140-88-5	**	Ethyl acrylate	88	105	245,982	1,211	0	265	247,458	7,110	254,568
			95	106	221,362	542	0	523	222,427	10,182	232,609
			98o	100	123,762	110	0	524	124,396	12,016	136,412
			98n	10	3,372	0	0	0	3,372	267	3,639
			99o	97	129,276	111	810	516	130,713	28,772	159,485
			99n	12	1,844	1	0	14,649	16,494	880	17,374
			00o	97	110,355	100	403	221	111,079	9,461	120,540
			00n	13	798	0	0	12,544	13,342	435	13,777
100-41-4	**	Ethylbenzene	88	564	7,718,781	15,970	72,914	175,180	7,982,845	421,334	8,404,179
			95	1,043	10,330,110	9,343	475,234	19,179	10,833,866	168,191	11,002,057
			98o	1,035	8,541,277	7,284	763,279	200,697	9,512,537	148,421	9,660,958
			98n	620	129,365	2,750	913	14,229	147,257	23,524	170,781
			99o	1,048	8,681,277	7,408	868,615	7,250	9,564,550	174,758	9,739,308
			99n	594	117,803	1,810	11,684	32,615	163,912	166,355	330,267
			00o	1,067	8,118,942	14,791	534,858	37,481	8,706,072	108,005	8,814,077
			00n	578	200,708	577	28,148	12,243	241,676	23,483	265,159
541-41-3		Ethyl chloro-formate	88	5	13,903	0	0	0	13,903	0	13,903
			95	3	2,020	5	0	5	2,030	0	2,030
			98o	5	2,259	5	0	5	2,269	0	2,269
			98n	No reports							
			99o	4	2,200	5	0	5	2,210	0	2,210
			99n	No reports							
			00o	5	1,846	5	0	5	1,856	0	1,856
			00n	No reports							
759-94-4	*	Ethyl dipropyl-thiocarbamate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	4	2,363	291	373	0	3,027	9,366	12,393
			98o	5	2,008	115	2,088	0	4,211	4,565	8,776
			98n	1	0	0	0	0	0	0	0
			99o	4	2,574	156	903	0	3,633	3,570	7,203
			99n	No reports							
			00o	4	2,034	95	6,083	0	8,212	2,798	11,010
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen (see Appendix C for more information) Ethylbenzene meets OSHA carcinogen standard effective for the 2001 reporting year

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

	Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*	Ethoprop	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	9	0	0	0	0	9,404	174,442	183,855	0
		98o	95	0	0	0	0	4,943	116,478	121,516	0
		98n	0	0	0	0	12,176	0	6	12,182	0
		99o	69	0	0	0	0	20,347	137,041	157,457	0
		99n	0	0	0	0	50,057	0	27	50,084	0
		00o	0	0	0	0	0	3,338	105,026	108,364	0
		00n	0	0	0	0	27,193	6	0	27,199	0
	2-Ethoxyethanol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	2,300	1,720	434,164	142,160	1,332,131	438,878	222,188	2,573,541	36,526
		98o	1,400	0	584,971	93,670	507,214	847,586	112,530	2,147,371	10,515
		98n	0	26,052	0	2,939,348	77,858	15,458	1,509	3,060,225	0
		99o	1,200	0	12,992,481	92,566	882,595	906,595	150,824	15,026,261	0
		99n	1,245,636	87,571	0	1,956,055	1,168,105	1,528,555	1,906	5,987,828	10
		00o	1,200	0	2,642,249	208,006	234,922	262,557	95,299	3,444,233	0
		00n	0	0	1,098	156,732	622,820	105	11,576	792,331	0
**	Ethyl acrylate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	79	32,449	8,159,796	1,356,852	487,880	96,769	231,219	10,365,044	24,056
		98o	381,888	191	8,430,381	1,518,284	1,178,908	353,939	138,413	12,002,004	4,152
		98n	0	9,269	0	887,313	252,221	45	3,633	1,152,481	0
		99o	606,528	260	10,064,209	1,717,979	887,528	368,981	168,304	13,813,789	2,509
		99n	0	0	0	8,908	454,088	33,550	17,120	513,666	0
		00o	979,107	70	7,531,839	1,309,783	1,170,964	602,439	119,729	11,713,931	1,737
		00n	0	0	0	77,525	313,636	120	24,352	415,633	12
**	Ethylbenzene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	25,033,644	6,790,404	40,943,220	11,380,737	19,494,726	1,860,236	10,894,758	116,397,725	13,400
		98o	28,923,181	6,353,297	36,777,436	10,134,419	16,346,276	2,311,912	9,593,575	110,440,096	53,148
		98n	2,616,137	382,495	42,357	18,808,007	2,401,346	1,389,385	575,473	26,215,200	101,940
		99o	24,799,246	5,612,276	33,384,476	8,549,910	17,501,809	1,737,081	9,935,727	101,520,525	46,301
		99n	3,403,407	86,644	111,775	6,092,137	2,735,224	941,619	149,310	13,520,116	12,921
		00o	18,892,443	6,834,372	31,084,276	8,978,348	19,458,720	1,300,791	9,069,857	95,618,807	13,142
		00n	4,413,259	69,158	108,540	5,783,224	2,545,729	1,145,153	283,881	14,348,944	3,653
	Ethyl chloroformate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	3,300	0	1,980	5,280	10
		98o	0	0	0	0	53,660	0	2,035	55,695	0
		98n	No reports								
		99o	0	0	0	0	21,445	0	1,998	23,443	0
		99n	No reports								
		00o	0	42	0	0	52,398	160	1,875	54,475	0
		00n	No reports								
*	Ethyl dipropylthiocarbamate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	6,500	33,010	12,476	51,986	0
		98o	0	0	0	0	70,619	33,089	8,528	112,236	524
		98n	0	0	0	0	11,716	0	0	11,716	0
		99o	0	0	0	0	859	14,694	7,119	22,672	1,508
		99n	No reports								
		00o	0	0	0	0	819	61,045	10,163	72,027	9,222
		00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988).
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen (see Appendix C for more information) Ethylbenzene meets OSHA carcinogen standard effective for the 2001 reporting year

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
74-85-1	*	Ethylene	88	274	50,503,039	15,214	17,203	13,250	50,548,706	11,432	50,560,138
			95	289	35,223,562	27,574	0	16	35,251,152	1,771	35,252,923
			98o	314	31,036,140	3,059	4,217	83	31,043,499	1,815	31,045,314
			98n	9	46,345	0	0	0	46,345	0	46,345
			99o	303	25,442,444	918	65,158	71,624	25,580,144	361	25,580,505
			99n	9	42,756	0	0	0	42,756	0	42,756
			00o	302	23,167,072	889	31,447	0	23,199,408	395	23,199,803
			00n	8	25,777	0	0	0	25,777	0	25,777
--		Ethylenebisdithio-carbamic acid, salts and esters	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	1,630	0	0	0	1,630	0	1,630
			98o	4	164	0	0	0	164	513	677
			98n	1	0	0	0	0	0	0	0
			99o	4	256	0	0	0	256	0	256
			99n	2	5	0	0	0	5	159	164
			00o	6	150	0	0	0	150	0	150
			00n	2	0	0	0	0	0	0	0
107-21-1	*	Ethylene glycol	88	1,456	13,218,339	3,747,561	7,927,570	736,344	25,629,814	2,595,276	28,225,090
			95	1,317	7,224,374	869,708	12,554,675	983,550	21,632,307	1,480,855	23,113,162
			98o	1,284	5,994,700	828,948	327,030	528,455	7,679,133	1,239,379	8,918,512
			98n	390	31,993	1,215	215,158	473,025	721,391	659,027	1,380,418
			99o	1,244	5,431,551	542,567	732,545	455,122	7,161,785	2,193,136	9,354,921
			99n	403	25,017	1,480	492,264	643,972	1,162,733	255,646	1,418,379
			00o	1,233	4,471,829	723,648	527,934	323,230	6,046,641	3,190,514	9,237,155
			00n	401	125,489	2,577	54,005	812,897	994,968	2,746,617	3,741,585
151-56-4	**	Ethyleneimine	88	1	500	0	0	0	500	0	500
			95	1	3	0	0	0	3	0	3
			98o	1	21	0	0	0	21	0	21
			98n	1	13	0	0	0	13	0	13
			99o	1	6	0	0	0	6	0	6
			99n	2	4	0	0	0	4	153	157
			00o	1	3	0	0	0	3	0	3
			00n	1	0	0	0	0	0	0	0
75-21-8	*,**	Ethylene oxide	88	203	4,640,310	44,851	11,125	54,700	4,750,986	20,663	4,771,649
			95	169	939,303	5,230	130,000	2,208	1,076,741	8,663	1,085,404
			98o	136	584,924	372	22,561	1,751	609,608	1,860	611,468
			98n	19	105,764	0	0	0	105,764	0	105,764
			99o	131	458,093	1,157	10,796	1,750	471,796	60,920	532,716
			99n	18	37,038	1	0	0	37,039	4	37,043
			00o	133	423,874	6,912	226	401	431,413	56,820	488,233
			00n	20	41,556	0	0	0	41,556	0	41,556
96-45-7	*,**	Ethylene thiourea	88	6	500	0	0	0	500	2,250	2,750
			95	11	775	0	0	0	775	19,665	20,440
			98o	14	299	5	0	0	304	6,387	6,691
			98n	2	0	0	0	0	0	0	0
			99o	13	269	5	0	0	274	5,422	5,696
			99n	4	24	0	0	0	24	773	797
			00o	12	265	10	0	0	275	1,890	2,165
			00n	4	10	0	0	0	10	129	139

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Ethylene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	196,803,539	3	403,745,755	10,615,177	495,602,266	2,116,568	34,762,869	1,143,646,177	765,799
	98o	123,871,793	0	518,927,961	12,978,078	509,148,642	3,013,379	29,322,220	1,197,262,073	1,428,754
	98n	0	0	0	0	540	0	46,087	46,627	0
	99o	146,760,300	317	411,077,331	11,136,191	565,895,661	4,761,444	26,540,333	1,166,171,577	393,952
	99n	0	0	0	0	8,080	0	42,624	50,704	0
	00o	150,547,424	318	472,762,499	17,008,011	2,754,282,453	1,751,482	22,640,811	3,418,992,998	313,839
	00n	0	0	0	0	410,589	4	25,567	436,160	0
Ethylenebisdithiocarbamic acid, salts and esters	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	7,250	1,500	8,750	0
	98o	0	0	0	0	0	3,329	672	4,001	0
	98n	0	0	0	0	0	0	0	0	0
	99o	0	0	0	0	0	8,070	356	8,426	0
	99n	0	0	0	0	129,960	0	164	130,124	0
	00o	0	0	1,057	2,290	0	18,092	149	21,588	0
	00n	0	0	0	0	90,092	0	0	90,092	0
* Ethylene glycol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	366,424,640	101,902,466	5,926,147	13,192,654	65,797,774	34,580,342	22,744,086	610,568,109	305,160
	98o	461,217,302	49,853,776	6,683,532	18,938,570	64,587,563	31,443,306	9,901,238	642,625,287	819,615
	98n	10,537,568	10,238,097	12,386	3,186,484	1,914,090	516,637	812,855	27,218,117	12,610
	99o	470,136,680	59,428,456	7,811,770	15,057,598	50,194,588	27,826,517	10,437,184	640,892,793	931,522
	99n	7,245,393	12,269,659	615,919	1,408,820	2,099,544	1,737,251	1,242,416	26,619,002	830
	00o	419,644,691	61,325,680	5,394,475	14,843,142	77,003,486	29,881,855	7,938,576	616,031,905	73,021
	00n	7,021,950	12,690,039	8,671	1,332,605	2,243,203	524,434	3,616,930	27,437,832	45,358
** Ethyleneimine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	34,000	0	3	34,003	0
	98o	0	0	0	0	24,000	0	21	24,021	0
	98n	0	0	0	31,069	0	0	13	31,082	0
	99o	0	0	0	0	23,000	0	6	23,006	0
	99n	0	0	0	0	107,040	0	157	107,197	0
	00o	0	0	0	0	19,000	0	3	19,003	0
	00n	0	0	0	0	55,812	0	0	55,812	0
*,** Ethylene oxide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	127,110	307	16,940	0	9,974,540	70,255	1,073,275	11,262,427	15,962
	98o	16,698	1,140	13,121	10	8,006,017	179,253	555,898	8,772,137	54,313
	98n	0	0	0	1,043,180	2,998,788	10,810	105,044	4,157,822	106
	99o	33,020	7,400	148,002	16	8,335,278	154,693	525,358	9,203,767	4,031
	99n	0	0	0	0	3,154,065	11,920	37,729	3,203,714	587
	00o	263,388	20,000	176,677	5	14,869,064	127,221	476,646	15,933,001	9,443
	00n	0	0	0	0	3,431,433	16,963	41,643	3,490,039	88
*,** Ethylene thiourea	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	1	840	0	0	1	6,282	19,877	27,001	0
	98o	430	565	0	0	0	8,632	6,635	16,262	0
	98n	0	0	0	0	0	0	0	0	0
	99o	2,700	800	0	0	0	3,650	5,726	12,876	0
	99n	0	0	0	0	690,152	0	795	690,947	0
	00o	2,750	580	0	0	0	2,995	2,210	8,535	0
	00n	0	0	0	0	42,560	774	139	43,473	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988).
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
75-34-3		Ethylidene dichloride	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	6	40,484	16	0	0	40,500	0	40,500
			98o	7	43,977	0	0	0	43,977	0	43,977
			98n	6	393	0	0	0	393	8	401
			99o	9	82,306	0	0	3	82,309	0	82,309
			99n	2	92	1	0	0	93	9	102
			00o	11	14,957	0	0	0	14,957	7	14,964
			00n	5	2	0	0	0	2	0	2
52-85-7	*	Famphur	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	0	0	0	0	0	0	0
			98o	2	0	0	0	0	0	9,200	9,200
			98n	1	5	0	0	0	5	0	5
			99o	2	0	0	0	0	0	5,612	5,612
			99n	1	5	0	0	0	5	0	5
			00o	1	0	0	0	0	0	0	0
			00n	1	0	0	0	0	0	0	0
60168-88-9	*	Fenarimol	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	1,000	0	0	0	1,000	0	1,000
			98o	2	0	0	0	0	0	0	0
			98n	No reports							
			99o	2	0	0	0	0	0	0	0
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							
13356-08-6	*	Fenbutatin oxide	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	2	664	0	660	0	1,324	0	1,324
			98n	No reports							
			99o	2	664	0	660	0	1,324	0	1,324
			99n	No reports							
			00o	2	664	0	1,260	0	1,924	0	1,924
			00n	No reports							
66441-23-4	*	Fenoxaprop ethyl	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
72490-01-8	*	Fenoxycarb	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	1	0	0	0	0	0	1	1
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR: not reportable (chemicals added to the TRI list after 1988)
DC: definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
	Ethylidene dichloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	1,300,000	0	1,392,000	0	1,612,000	19,149	40,169	4,363,318	15,005
		98o	1,600,000	0	1,431,278	0	2,332,070	23,768	43,948	5,431,064	89
		98n	0	0	0	10,275	35,933	4,528,132	395	4,574,735	0
		99o	2,190,000	0	2,712,610	456	3,522,136	10,830	82,225	8,518,257	80
		99n	0	0	0	0	117,269	0	99	117,368	0
		00o	1,400,000	103,754	4,746,196	347	2,196,764	14,870	14,934	8,476,865	30
		00n	0	0	0	0	95,642	836	1	96,479	0
*	Famphur	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	3,758	0	3,758	0
		98o	0	0	0	0	0	46,000	0	46,000	9
		98n	0	0	0	0	25,761	0	7	25,768	0
		99o	0	0	0	0	0	2,200	0	2,200	5,612
		99n	0	0	0	0	25,757	0	4	25,761	0
		00o	0	0	0	0	0	2,900	0	2,900	0
		00n	0	0	0	0	0	0	0	0	0
*	Fenarimol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	310	650	960	0
		98o	0	0	0	0	0	0	0	0	0
		98n	No reports								
		99o	0	0	0	0	0	0	0	0	0
		99n	No reports								
		00o	0	0	0	0	0	0	0	0	0
		00n	No reports								
*	Fenbutatin oxide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	0	0	0
		98o	0	0	0	0	0	0	1,324	1,324	0
		98n	No reports								
		99o	0	0	0	33,822	0	0	1,324	35,146	0
		99n	No reports								
		00o	0	0	0	0	0	0	1,924	1,924	0
		00n	No reports								
*	Fenoxaprop ethyl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
*	Fenoxycarb	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	0	0	0
		98o	0	0	0	0	40,000	0	1	40,001	0
		98n	No reports								
		99o	0	0	0	0	28,000	0	0	28,000	0
		99n	No reports								
		00o	0	0	0	0	23,000	0	0	23,000	0
		00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

					On-site Releases					Off-site Releases	
CAS Number		Chemical	Year	Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
39515-41-8	*	Fenpropathrin	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							
55-38-9	*	Fenthion	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	1	1	0	0	0	1	0	1
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	1	1	0	0	0	1	0	1
			00n	No reports							
51630-58-1	*	Fenvalerate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
14484-64-1	*	Ferbam	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
69806-50-4	*	Fluazifop butyl	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	2	0	0	0	0	0	0	0
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							
2164-17-2	*	Fluometuron	88	2	500	0	0	0	500	3,700	4,200
			95	6	796	0	0	0	796	2,355	3,151
			98o	5	782	0	0	0	782	745	1,527
			98n	No reports							
			99o	4	263	0	0	0	263	0	263
			99n	No reports							
			00o	3	15	0	0	0	15	0	15
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*	Fenpropathrin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	0	0	0
		98o	0	0	0	0	0	0	0	0	0
		98n	No reports								
		99o	0	0	0	0	0	0	0	0	0
		99n	No reports								
		00o	0	0	0	0	0	0	0	0	0
		00n	No reports								
*	Fenthion	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	0	0	0
		98o	0	0	0	0	0	960	1	961	0
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	0	0	0	0	0	1,976	1	1,977	0
		00n	No reports								
*	Fenvalerate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	0	0	0
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
*	Ferbam	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
*	Fluazifop butyl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	0	0	0	0	0	0	0	0	0
		98n	No reports								
		99o	0	0	0	0	0	0	0	0	0
		99n	No reports								
		00o	0	0	0	0	0	0	0	0	0
		00n	No reports								
*	Fluometuron	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	2	0	16,900	5,646	22,548	13,000
		98o	0	0	0	0	25,000	8,541	1,385	34,926	0
		98n	No reports								
		99o	0	0	0	0	37,000	2,512	1,680	41,192	0
		99n	No reports								
		00o	0	0	0	0	18,000	2,600	2,600	23,200	0
		00n	No reports								

Note. Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number	Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
7782-41-4	Fluorine	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	7	18,319	15,000	0	0	33,319	0	33,319
		98o	10	81,938	49,857	0	0	131,795	0	131,795
		98n	2	39,082	0	0	90,778	129,860	0	129,860
		99o	13	86,552	54,153	0	0	140,705	0	140,705
		99n	3	427	0	0	105,417	105,844	0	105,844
		00o	11	8,336	40,274	0	70,200	118,810	70,009	188,819
		00n	4	3,799	0	0	104,779	108,578	11,287	119,865
51-21-8	Fluorouracil	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	No reports							
		98o	1	0	0	0	250	250	250	500
		98n	No reports							
		99o	1	0	0	0	250	250	500	750
		99n	No reports							
		00o	1	0	0	0	250	250	250	500
		00n	No reports							
69409-94-5 *	Fluvalinate	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	1	0	0	0	0	0	0	0
		98o	1	0	0	0	0	0	0	0
		98n	No reports							
		99o	1	0	0	0	0	0	0	0
		99n	No reports							
		00o	2	0	0	0	0	0	0	0
		00n	No reports							
133-07-3 *	Folpet	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	5	16	5	0	0	21	1,941	1,962
		98o	8	56	10	0	0	66	4,103	4,169
		98n	No reports							
		99o	6	36	10	0	0	46	3,023	3,069
		99n	No reports							
		00o	7	823	10	0	0	833	3,033	3,866
		00n	No reports							
72178-02-0	Fomesafen	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	2	10	0	0	0	10	750	760
		98o	2	884	1,532	0	0	2,416	9,191	11,607
		98n	1	0	0	0	0	0	0	0
		99o	2	1,210	1,149	0	0	2,359	7,976	10,335
		99n	1	0	0	0	0	0	0	0
		00o	2	1,298	1,176	0	0	2,474	6,740	9,214
		00n	1	0	0	0	0	0	0	0
50-00-0	*,** Formaldehyde	88	823	12,459,138	904,547	9,608,524	494,111	23,466,320	1,409,999	24,876,319
		95	802	11,755,024	402,609	7,313,034	132,453	19,603,120	210,666	19,813,786
		98o	831	11,836,859	422,847	9,648,556	203,982	22,112,244	355,781	22,468,025
		98n	38	143,166	0	76,238	83,190	302,594	6,228	308,822
		99o	822	12,312,444	430,173	10,849,428	313,776	23,905,821	184,560	24,090,381
		99n	34	85,118	1	31,437	0	116,556	6,264	122,820
		00o	834	11,542,027	408,124	12,174,896	105,180	24,230,227	217,246	24,447,472
		00n	40	65,299	10	53,984	3,067	122,360	19,493	141,853

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
Fluorine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	15,000	0	33,300	48,300	0
	98o	0	0	0	0	17,450	36,510	131,795	185,755	3
	98n	0	0	0	0	0	0	129,859	129,859	0
	99o	0	0	0	0	26,581	20,435	140,495	187,511	32
	99n	0	0	0	0	31,839	0	105,844	137,683	0
	00o	262,000	0	0	0	1	11,331	188,716	462,048	7
	00n	0	0	0	0	31,624	0	119,865	151,489	0
Fluorouracil	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	964	0	0	0	0	0	0	964	0
	98n	No reports								
	99o	1,188	0	0	0	0	0	0	1,188	0
	99n	No reports								
	00o	1,271	0	0	0	0	0	0	1,271	0
	00n	No reports								
* Fluvalinate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	0	0	0	0	0	0	0	0	0
	99n	No reports								
	00o	0	0	0	0	0	0	0	0	0
	00n	No reports								
* Folpet	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	80	0	0	801	290	1,962	3,133	0
	98o	2	0	0	0	2,100	0	4,121	6,223	0
	98n	No reports								
	99o	943	0	0	0	2,000	627	3,069	6,639	0
	99n	No reports								
	00o	1,630	0	0	0	0	728	3,741	6,099	0
	00n	No reports								
Fomesafen	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	200	200	0
	98o	0	0	0	0	56,080	8,845	12,776	77,701	0
	98n	0	0	0	0	12,741	0	0	12,741	0
	99o	0	0	0	0	64,083	1,522	11,035	76,640	0
	99n	0	0	0	0	15,000	0	0	15,000	0
	00o	0	0	0	0	6,309	1,522	9,558	17,389	0
	00n	0	0	0	0	18,390	0	0	18,390	0
*,** Formaldehyde	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	75,909,072	56,999	6,758,262	423,718	68,740,738	2,919,821	19,659,066	174,467,676	268,331
	98o	101,303,291	591,297	14,710,847	372,961	92,722,738	3,673,443	21,923,324	235,297,901	16,008
	98n	189	0	5,866	1,582,146	531,568	14,648	306,176	2,440,593	0
	99o	106,756,307	429,652	15,555,496	393,011	83,186,022	4,311,787	23,776,793	234,409,068	15,210
	99n	45,284	0	2,110	114,378	1,316,978	16,496	117,708	1,612,954	10
	00o	112,270,707	288,881	23,223,211	565,407	177,227,123	6,301,466	24,926,748	344,803,543	4,498
	00n	5,954	0	10,048	157,177	1,942,240	140,091	131,426	2,386,936	0

Note. Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
64-18-6	*	Formic acid	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	269	592,409	15,759	11,492,418	3,210	12,103,796	26,377	12,130,173
			98o	276	955,933	96,168	10,842,580	3,299	11,897,980	46,835	11,944,815
			98n	51	3,053	19	326,344	65,624	395,040	3,175	398,215
			99o	268	770,867	172,924	11,424,031	3,622	12,371,444	49,940	12,421,384
			99n	48	2,089	11	31,000	0	33,100	2,819	35,919
			00o	273	767,074	280,151	8,614,752	4,270	9,666,247	55,723	9,721,970
			00n	51	1,475	6	31,000	0	32,481	365	32,846
76-13-1		Freon 113	88	1,438	70,382,591	32,894	5,965	27,799	70,449,249	1,924,043	72,373,292
			95	138	2,608,115	3,829	6	0	2,611,950	2,560	2,614,510
			98o	32	941,033	1,627	0	0	942,660	4,287	946,947
			98n	17	1,016	0	0	0	1,016	746	1,762
			99o	25	840,078	1,932	0	0	842,010	88	842,098
			99n	12	1,178	1	0	9,955	11,134	5,392	16,526
			00o	24	675,542	1,292	0	0	676,834	500	677,334
			00n	9	518	0	0	0	518	0	518
--		Glycol ethers	88	1,629	48,930,602	285,937	362,198	105,185	49,683,922	1,547,840	51,231,762
			95	2,198	45,401,044	188,537	132,064	27,700	45,749,345	792,149	46,541,494
			98o	2,067	38,638,235	193,191	1,620	41,418	38,874,464	691,268	39,565,732
			98n	259	31,027	0	0	16,900	47,927	17,995	65,922
			99o	1,986	36,329,413	106,588	716	49,186	36,485,903	849,757	37,335,660
			99n	245	46,199	0	0	24,398	70,597	394,750	465,347
			00o	1,958	31,179,323	109,904	45,224	42,498	31,376,949	1,689,325	33,066,273
			00n	245	39,801	4	0	22,904	62,709	2,217,547	2,280,256
76-44-8	*,**	Heptachlor	88	2	54,295	2	0	0	54,297	0	54,297
			95	1	203	6	0	0	209	0	209
			98o	No reports							
			98n	6	137	0	5	0	142	12	154
			99o	No reports							
			99n	4	5	1	0	0	6	14	20
		Not comparable	00o	1	0.00	0.00	0.00	0.00	0 00	0.00	0.00
		to prior years***	00n	14	6.60	0.00	0.00	2,372.56	2,379 16	221.87	2,601.03
118-74-1	*,**	Hexachloro-	88	9	4,045	4	410	0	4,459	443,541	448,000
		benzene	95	9	566	6,458	480	0	7,504	6,975	14,479
			98o	12	371	4	0	96	471	13,251	13,722
			98n	5	15	0	0	0	15	77	92
			99o	14	560	7	0	23	590	1,497	2,087
			99n	6	11	1	0	13,000	13,012	9	13,021
		Not comparable	00o	74	1,307.52	328.00	20.39	5,988.20	7,644.11	3,035.30	10,679.41
		to prior years***	00n	26	118.72	3.44	28.00	16,712.00	16,862.16	9,985.74	26,847.90
87-68-3		Hexachloro-1,3-	88	9	2,508	153	220	0	2,881	19,640	22,521
		butadiene	95	7	3,310	661	434	0	4,405	252	4,657
			98o	7	2,380	5	0	0	2,385	510	2,895
			98n	7	280	250	5	0	535	480	1,015
			99o	8	4,159	1	0	22	4,182	4	4,186
			99n	4	268	1	0	0	269	96	365
			00o	6	3,990	0	0	4	3,994	6	4,000
			00n	6	16	0	250	0	266	3	269

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Formic acid	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	95,200	28	7,215,445	236,018	113,989,498	1,522,252	12,253,648	135,312,089	8
	98o	808,843	14	5,818,086	1,774,563	155,610,246	1,591,846	12,185,304	177,788,902	0
	98n	0	0	0	1,973,764	242,133	11,082	395,995	2,622,974	0
	99o	710,746	10	6,613,867	1,731,510	135,116,811	1,392,044	12,628,981	158,193,969	100
	99n	0	0	0	2	507,537	485	35,134	543,158	0
	00o	739,637	10	4,947,522	2,086,987	163,872,814	334,275	9,839,660	181,820,905	0
	00n	0	0	0	6	481,138	3,070	32,086	516,300	0
Freon 113	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	2,355,210	913,898	0	103,937	260,926	582,454	2,612,917	6,829,342	30,129
	98o	407,512	73,959	39,916	12,608	3,372	139,670	936,926	1,613,963	6,305
	98n	75,808	67	0	106,221	1,167,895	5,166,938	1,778	6,518,707	0
	99o	227,460	97,641	37,035	16,184	4,064	136,023	775,715	1,294,122	65,286
	99n	75,298	117	0	11,418	858,798	17,969	16,578	980,178	0
	00o	107,843	159,715	0	13,515	9,922	149,755	676,560	1,117,310	179
	00n	0	0	0	0	743,005	570	514	744,089	0
Glycol ethers	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	191,650,369	3,642,594	42,841,794	13,279,118	32,439,804	9,480,426	47,485,143	340,819,248	35,258
	98o	141,591,278	4,071,587	32,974,473	13,229,852	33,197,727	10,116,024	40,660,482	275,841,423	377,490
	98n	888,028	164,569	135,664	2,033,726	837,402	101,280	75,786	4,236,455	5,262
	99o	165,270,850	4,199,079	44,249,404	12,836,323	45,035,803	10,155,060	38,521,106	320,267,625	11,103
	99n	1,345,277	40,090	763,444	1,945,894	651,473	463,039	379,922	5,589,139	1,272
	00o	189,133,472	3,514,399	22,947,758	12,606,554	47,133,832	9,664,808	34,224,733	319,225,556	17,380
	00n	1,081,608	15,718	184,243	2,809,460	783,000	910,997	2,277,904	8,062,930	115
*,** Heptachlor	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	3,850	851	209	4,910	0
	98o	No reports								
	98n	0	0	0	0	443,474	35	153	443,662	0
	99o	No reports								
	99n	0	0	0	0	217,288	114	15	217,417	0
Not comparable	00o	0.00	0 00	42 00	0.00	0.00	0.00	0 00	42.00	0.00
to prior years***	00n	0 00	0 00	0 00	0.00	237,739.73	3,773.30	2,394.03	243,907.06	0.00
*,** Hexachloro-	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
benzene	95	6,200	1	0	0	2,865,008	428,747	18,549	3,318,505	19
	98o	8,100	1	114,000	54,632	1,577,157	18,214	13,636	1,785,740	0
	98n	0	0	0	0	86,605	38	88	86,731	0
	99o	6,601	26,253	98,000	40,950	5,231,018	22,287	14,175	5,439,284	7
	99n	0	0	0	0	399,458	699	13,013	413,170	0
Not comparable	00o	6,000.50	12,039.00	140,662.00	56,573.00	5,737,195.00	18,146.15	21,577.03	5,992,192.68	21,752.30
to prior years***	00n	0.00	0.00	0.00	12.00	417,731.17	1,315.00	26,843.56	445,901.73	0.00
Hexachloro-1,3-	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
butadiene	95	0	13	133,000	0	6,778,662	164,970	4,444	7,081,089	660,211
	98o	0	0	15,200	0	4,289,000	162,314	2,650	4,469,164	410
	98n	0	0	0	0	283,141	40	363	283,544	0
	99o	280,000	0	0	0	8,715,965	52,784	4,169	9,052,918	36,000
	99n	0	0	0	0	554,740	0	362	555,102	0
	00o	250,000	0	26,548	69	331,945,755	28,841	3,999	332,255,212	0
	00n	0	0	0	0	306,941	776	47	307,764	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
319-84-6	**	alpha-Hexachloro-cyclohexane	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
77-47-4	*	Hexachlorocyclo-pentadiene	88	5	78,317	6	2,131	0	80,454	28,470	108,924
			95	4	8,311	6	250	0	8,567	2,995	11,562
			98o	4	5,791	0	250	5,520	11,561	567	12,128
			98n	4	10	0	0	0	10	500	510
			99o	4	1,098	1	0	0	1,099	903	2,002
			99n	3	16	1	0	0	17	293	310
			00o	5	1,283	0	0	0	1,283	1,921	3,204
			00n	4	22	0	0	0	22	0	22
67-72-1	*,**	Hexachloroethane	88	22	19,077	11	520	1	19,609	128,504	148,113
			95	22	14,871	3,330	1,378	0	19,579	1,208	20,787
			98o	15	44,950	0	295	0	45,245	696	45,941
			98n	7	862	0	0	0	862	628	1,490
			99o	15	41,267	0	320	10	41,597	0	41,597
			99n	9	1,326	1	0	9,264	10,591	18,389	28,980
			00o	14	32,673	0	362	3	33,038	2,300	35,338
			00n	8	1,776	10	250	0	2,036	2,563	4,599
1335-87-1		Hexachloro-naphthalene	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
70-30-4	*	Hexachlorophene	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	1	0	0	0	0	0	0	0
			99o	No reports							
			99n	3	7	1	0	0	8	165	173
			00o	No reports							
			00n	3	0	0	0	0	0	0	0
680-31-9	**	Hexamethylphos-phoramide	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

	Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
**	alpha-Hexachloro-cyclohexane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
*	Hexachlorocyclo-pentadiene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	272,865	24,908	11,478	309,251	76
		98o	0	0	0	552	882,835	100,678	6,611	990,676	4,800
		98n	0	0	0	0	21,880	2,695,206	151	2,717,237	0
		99o	0	0	0	388	392,082	10,812	1,980	405,262	84,000
		99n	0	0	0	0	145,509	1	177	145,687	0
		00o	0	0	21,237	447	817,132	34,513	2,008	875,337	100,000
		00n	0	0	0	0	126,542	789	19	127,350	0
*,**	Hexachloroethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	4,800	0	1,232,400	75,132	4,875,108	109,188	30,473	6,327,101	129,205
		98o	1,100,000	0	1,134,700	85,401	3,887,000	52,877	45,206	6,305,184	36
		98n	0	0	0	2,214	543,137	2	1,138	546,491	0
		99o	1,930,000	164,072	740,000	87,890	2,756,485	44,622	41,248	5,764,317	355
		99n	138,553	0	0	123,769	576,027	162	15,427	853,938	10
		00o	970,000	57,963	422,097	68,539	115,684,405	48,070	35,546	117,286,620	238
		00n	77,000	0	0	43,000	526,113	43,911	1,725	691,749	0
	Hexachloro-naphthalene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
*	Hexachlorophene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	0	0	0	0	0	0	0	0	0
		99o	No reports								
		99n	0	0	0	0	219,953	0	168	220,121	0
		00o	No reports								
		00n	0	0	0	733	110,711	54	0	111,498	0
**	Hexamethylphos-phoramide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	0	0	0	0	0	0	0	0	0
		00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
110-54-3		n-Hexane	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	733	82,155,446	46,402	5,380	11,559	82,218,787	120,420	82,339,207
			98o	816	67,410,027	14,116	26,506	19,597	67,470,246	104,319	67,574,565
			98n	658	954,568	1,670	0	2,491	958,729	38,865	997,594
			99o	795	55,144,441	11,134	36,511	7,429	55,199,515	47,697	55,247,212
			99n	650	1,018,755	2,779	5,483	564	1,027,581	28,780	1,056,361
			00o	795	52,550,376	12,484	112,886	4,856	52,680,602	33,131	52,713,733
			00n	640	1,311,200	4,417	1,780	7,588	1,324,985	86,066	1,411,051
51235-04-2	*	Hexazinone	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	4	760	6,322	0	0	7,082	2,973	10,055
			98o	5	266	2,215	0	0	2,481	750	3,231
			98n	No reports							
			99o	5	264	6,297	0	0	6,561	250	6,811
			99n	No reports							
			00o	4	2	1,874	0	0	1,876	0	1,876
			00n	No reports							
67485-29-4	*	Hydramethylnon	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	20	0	0	0	20	0	20
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	2	10	0	0	750	760	0	760
			99n	No reports							
			00o	2	10	0	0	5	15	0	15
			00n	No reports							
302-01-2	**	Hydrazine	88	55	35,199	2,149	0	29	37,377	24,522	61,899
			95	47	13,940	3	0	5	13,948	23,504	37,452
			98o	46	10,908	188	695	251	12,042	13,394	25,436
			98n	18	290	0	26,116	120	26,526	824	27,350
			99o	47	10,011	641	0	252	10,904	13,092	23,996
			99n	15	267	1	88,378	120	88,766	476	89,242
			00o	47	4,161	1,156	0	250	5,567	0	5,567
			00n	19	445	10,900	0	120	11,465	0	11,465
10034-93-2	**	Hydrazine sulfate	88	4	1,172	0	355,000	0	356,172	0	356,172
			95	3	0	0	260,000	0	260,000	0	260,000
			98o	1	0	0	200,000	0	200,000	0	200,000
			98n	No reports							
			99o	1	0	0	190,000	0	190,000	0	190,000
			99n	No reports							
			00o	1	0	0	150,000	0	150,000	0	150,000
			00n	No reports							
7647-01-0	*	Hydrochloric acid	88	DC	DC	DC	DC	DC	DC	DC	DC
			95	1,963	72,469,049	6,871	788,214	24,091	73,288,225	2,369,337	75,657,562
			98o	988	58,036,437	2,575	100,099	21,860	58,160,971	1,029,418	59,190,389
			98n	529	554,302,629	1	0	406	554,303,036	510	554,303,546
			99o	997	54,733,116	495	36,795	28,876	54,799,282	751,438	55,550,720
			99n	517	615,116,946	11	0	5	615,116,962	23	615,116,985
			00o	1,001	53,653,445	96,716	54,125	13,167	53,817,453	1,212,411	55,029,864
			00n	508	591,979,137	47	0	2,292	591,981,476	101,198	592,082,674

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
n-Hexane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	4,125,732,524	7,008,155	25,411,631	14,640,356	50,038,708	8,044,644	82,577,258	4,313,453,276	80,332
	98o	985,887,771	13,482,101	42,461,972	19,749,861	65,501,311	5,199,840	66,713,440	1,198,996,296	71,437
	98n	4,666,961	392,648	79,618	10,959,023	5,850,748	1,091,133	1,323,001	24,363,132	28,155
	99o	687,971,230	11,481,739	54,779,642	21,337,326	61,002,150	4,762,835	54,374,053	895,708,975	330,245
	99n	2,758,492	152,971	132,470	6,852,601	6,310,112	2,609,605	1,029,104	19,845,355	27,677
	00o	267,724,858	7,674,367	42,105,188	16,018,386	56,823,351	5,835,942	53,452,168	449,634,261	74,964
	00n	2,707,749	113,864	70,711	3,747,563	5,948,924	286,003	1,398,945	14,273,759	60,037
* Hexazinone	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	50	0	0	0	6,954	216,172	9,410	232,586	0
	98o	0	0	0	0	110,000	201,891	8,580	320,471	0
	98n	No reports								
	99o	0	0	0	0	71,000	164,269	13,155	248,424	0
	99n	No reports								
	00o	0	0	0	0	1,031	157,038	1,876	159,945	0
	00n	No reports								
* Hydramethylnon	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	3	17	20	0
	98o	0	0	0	0	0	0	24	24	0
	98n	No reports								
	99o	0	0	0	0	0	0	5	5	5
	99n	No reports								
	00o	0	0	0	0	0	3,382	0	3,382	0
	00n	No reports								
** Hydrazine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	300	452	0	0	31,538	8,966	37,225	78,481	0
	98o	25	0	0	297	99,831	302,545	37,526	440,224	1
	98n	0	0	0	1,762	179,583	0	27,126	208,471	0
	99o	25	0	5	0	61,611	142,341	53,354	257,336	3
	99n	0	0	0	45	455,640	10	88,759	544,454	0
	00o	25	0	0	0	123,946	4,387	5,069	133,427	0
	00n	0	0	0	0	354,173	857	11,251	366,281	0
** Hydrazine sulfate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	1,900	1,900	260,000	263,800	0
	98o	0	0	0	0	0	0	200,000	200,000	0
	98n	No reports								
	99o	0	0	0	0	0	0	190,000	190,000	0
	99n	No reports								
	00o	0	0	0	0	0	0	150,000	150,000	0
	00n	No reports								
* Hydrochloric acid	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	175,282,692	15,821,343	100,650	1,510	1,040,278,263	26,254,655	73,983,418	1,331,722,531	113,940
	98o	85,404,694	2,681,128	190,000	12,782	717,989,784	6,351,885	58,591,214	871,221,487	53,124
	98n	0	0	0	231,145	208,177,658	1,567	554,738,298	763,148,668	120,454
	99o	67,045,072	1,284,131	190,000	16,118	1,482,057,514	8,023,406	54,071,438	1,612,687,679	223,516
	99n	0	0	0	1	211,539,503	41,474	614,961,549	826,542,527	159,042
	00o	108,989,494	3,711,351	5,841,928	4,773	1,586,957,741	9,594,244	54,765,112	1,769,864,643	79,709
	00n	44,000	0	0	0	248,657,958	2,287	592,092,602	840,796,847	158,728

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
74-90-8	*	Hydrogen cyanide	88	35	1,109,277	2,300	1,737,850	1,761	2,851,188	1,001	2,852,189
			95	51	2,481,956	763	683,154	3	3,165,876	326	3,166,202
			98o	50	1,456,583	308	590,597	18	2,047,506	2,729	2,050,235
			98n	27	619,565	0	0	112,505	732,070	0	732,070
			99o	47	1,336,949	290	1,433,776	483	2,771,498	1,371	2,772,869
			99n	23	279,826	0	0	1,452	281,278	0	281,278
			00o	51	1,376,196	281	688,362	60	2,064,899	2,125	2,067,024
			00n	16	210,951	0	0	701	211,652	0	211,652
7664-39-3	*	Hydrogen fluoride	88	536	14,732,294	189,928	250	13,002	14,935,474	3,467,471	18,402,945
			95	577	11,629,135	8,702	3,845	24,078	11,665,760	1,020,784	12,686,544
			98o	632	15,785,580	23,194	0	2,940	15,811,714	57,141	15,868,855
			98n	403	64,131,145	6	2,900,000	151,228	67,182,379	48,758	67,231,137
			99o	633	14,550,550	16,983	0	4,153	14,571,686	31,651	14,603,337
			99n	401	58,322,750	12	4,100,000	130,120	62,552,882	60,094	62,612,976
			00o	623	13,356,714	22,252	0	4,106	13,383,072	114,568	13,497,640
			00n	409	57,434,142	4,206	4,700,000	128,870	62,267,218	48,971	62,316,189
123-31-9		Hydroquinone	88	61	10,334	7,211	375,400	530	393,475	6,835	400,310
			95	64	17,706	5,093	340,005	43	362,847	4,406	367,253
			98o	60	13,867	1,558	332,000	0	347,425	27,893	375,318
			98n	3	0	0	15,309	0	15,309	0	15,309
			99o	60	58,145	2,260	367,000	5	427,410	14,504	441,914
			99n	4	505	0	0	0	505	2,255	2,760
			00o	59	12,985	4,170	333,200	0	350,355	893	351,248
			00n	6	5	0	0	16,281	16,286	0	16,286
35554-44-0	*	Imazalil	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	1	0	0	0	0	0	10	10
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
55406-53-6	*	3-Iodo-2-propynyl butylcarbamate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	11	3,959	10	0	265	4,234	12,763	16,997
			98o	21	3,393	10	0	291	3,694	7,352	11,046
			98n	No reports							
			99o	23	3,145	10	0	286	3,441	249,941	253,382
			99n	1	0	0	0	42,000	42,000	0	42,000
			00o	26	3,362	10	0	264	3,636	50,644	54,280
			00n	1	0	0	0	41,300	41,300	0	41,300
13463-40-6		Iron pentacarbonyl	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	1,530	0	0	0	1,530	0	1,530
			98o	1	1,475	0	0	0	1,475	0	1,475
			98n	No reports							
			99o	1	1,517	0	0	0	1,517	0	1,517
			99n	No reports							
			00o	3	1,283	0	0	4	1,287	4	1,291
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries.
NR: not reportable (chemicals added to the TRI list after 1988)
DC: definition change (chemicals whose reporting definition has changed since 1988)
No reports: No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U.S.) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*	Hydrogen cyanide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	72,134	0	33,141,239	70	25,143,135	10,443	3,141,004	61,508,025	27,155
		98o	57,228	0	24,442,117	0	21,259,696	473	2,044,055	47,803,569	288
		98n	53,473	0	0	0	46,470	0	728,565	828,508	0
		99o	117,205	0	27,900,378	0	19,489,338	2,675	2,748,851	50,258,447	184
		99n	29,774	0	0	0	101,473	0	280,826	412,073	0
		00o	73,101	0	49,890,083	0	19,716,833	12,857	2,052,676	71,745,550	13,955
		00n	46,376	0	0	0	104,395	0	211,631	362,402	0
*	Hydrogen fluoride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	92,491,171	222,387	0	9,201	103,288,917	2,489,236	12,864,175	211,365,087	11,479
		98o	113,216,560	147,393	0	4,910	135,637,199	2,292,670	15,648,252	266,946,984	11,195
		98n	0	8,852	0	0	35,227,444	27,264	67,449,286	102,712,846	1
		99o	121,338,697	140,373	0	1,614	120,059,122	2,380,273	14,674,107	258,594,186	63,468
		99n	0	5,600	0	0	28,937,660	43,274	62,121,081	91,107,615	0
		00o	87,180,067	1,614,367	0	14,120	204,248,236	1,701,042	13,995,814	308,753,646	70,290
		00n	300	7,000	0	0	35,510,806	156,708	62,296,412	97,971,226	0
	Hydroquinone	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	960	0	986,933	37,786	417,185	86,342	363,576	1,892,782	43
		98o	3,200	0	848,845	10,066	405,144	126,922	359,750	1,753,927	0
		98n	0	0	0	0	85,610	0	15,309	100,919	0
		99o	1,300	0	927,893	36,525	656,620	157,583	445,098	2,225,019	0
		99n	30,660	0	1,563	13,050	105,812	1,624	326	153,035	10
		00o	1,500	0	1,131,108	8,615	1,327,969	113,661	358,283	2,941,136	0
		00n	0	0	0	0	109,034	652	16,283	125,969	0
*	Imazalil	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	0	0	0	0	0	15	0	15	15
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
*	3-Iodo-2-propynyl butylcarbamate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	1,755	2	0	1	300	62,552	5,151	69,761	0
		98o	30,906	0	400	5,561	334	123,399	6,271	166,871	0
		98n	No reports								
		99o	21,705	0	0	974	329	340,696	11,345	375,049	0
		99n	0	0	0	0	0	0	42,000	42,000	0
		00o	118,785	0	0	2,007	322	182,186	22,099	325,399	0
		00n	0	0	0	0	0	0	41,300	41,300	0
	Iron pentacarbonyl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	1,379	1,379	0
		98o	0	0	0	0	0	0	1,475	1,475	0
		98n	No reports								
		99o	0	0	0	0	0	0	1,517	1,517	0
		99n	No reports								
		00o	0	0	0	0	10,248	0	1,283	11,531	0
		00n	No reports								

Note. Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988).
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
78-84-2		Isobutyraldehyde	88	15	685,918	773	60	1	686,752	0	686,752
			95	24	256,279	752	44,075	47	301,153	0	301,153
			98o	20	254,460	1,182	0	0	255,642	172,233	427,875
			98n	2	165	0	0	0	165	5	170
			99o	20	259,971	966	0	0	260,937	124,062	384,999
			99n	No reports							
			00o	19	230,956	129	0	0	231,085	150,961	382,046
			00n	No reports							
465-73-6	*	Isodrin	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
		Not comparable	00o	No reports							
		to prior years***	00n	6	0 05	0.00	2 95	0 00	3 00	0 00	3 00
25311-71-1	*	Isofenphos	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	4	2,907	0	0	9,000	11,907	11,300	23,207
			98o	2	10	0	0	0	10	0	10
			98n	No reports							
			99o	2	205	0	0	0	205	0	205
			99n	No reports							
			00o	No reports							
			00n	No reports							
67-63-0	*	Isopropyl alcohol	88	91	2,001,397	1,900	0	14	2,003,311	247,039	2,250,350
		(manufacturing)	95	72	937,246	0	0	0	937,246	2,577	939,823
			98o	68	600,566	250	0	0	600,816	16,101	616,917
			98n	11	2,326	0	192,117	0	194,443	43,548	237,991
			99o	71	549,812	165	0	9	549,986	6,005	555,991
			99n	8	768	0	0	0	768	88,470	89,238
			00o	40	205,064	0	0	0	205,064	3,474	208,538
			00n	5	1,517	0	0	4,120	5,637	8,075	13,712
80-05-7		4,4'-Isopropyli-	88	80	226,986	126,385	0	426,065	779,436	444,560	1,223,996
		denediphenol	95	114	155,659	5,809	82,000	86,697	330,165	425,671	755,836
			98o	124	188,260	7,658	0	67,097	263,015	581,074	844,089
			98n	6	262	0	0	56,423	56,685	99	56,784
			99o	121	169,797	4,783	72	3,282	177,934	564,975	742,909
			99n	4	255	0	0	36,740	36,995	424	37,419
			00o	121	159,619	6,712	217	21,435	187,983	487,867	675,850
			00n	5	258	0	0	19,266	19,524	424	19,948
120-58-1		Isosafrole	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	1	0	0	0	0	0	0	0
			99o	No reports							
			99n	1	2	1	0	0	3	38	41
			00o	No reports							
			00n	2	0	0	0	0	0	0	0

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

	Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
	Isobutyraldehyde	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	9,647	1,193,119	567,515	609,409	76,894	300,129	2,756,713	0
		98o	0	48,000	1,509,037	550,059	1,118,885	118,174	429,051	3,773,206	221
		98n	0	0	0	32,119	15,206	659	165	48,149	0
		99o	10,188	3,800	2,902,392	539,410	1,180,083	36,804	403,453	5,076,130	0
		99n	No reports								
		00o	11,321	1,200	1,624,049	518,098	1,096,242	78,610	383,591	3,713,111	0
		00n	No reports								
*	Isodrin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
	Not comparable	00o	No reports								
	to prior years***	00n	0.00	0.00	0 00	0.00	6,603 84	0 00	3.00	6,606.84	0.00
*	Isofenphos	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	690	0	0	0	0	20,300	11,612	32,602	0
		98o	2,000	0	0	0	0	114	10	2,124	0
		98n	No reports								
		99o	20,000	0	0	0	0	0	210	20,210	0
		99n	No reports								
		00o	No reports								
		00n	No reports								
*	Isopropyl alcohol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	(manufacturing)	95	62,894	48,179	2,684,671	93,871	178,156	232,658	743,206	4,043,635	2
		98o	12,955	146,022	3,681,484	124,598	148,574	63,213	641,993	4,818,839	0
		98n	122,891	0	0	925,705	174,862	56,137	193,515	1,473,110	0
		99o	884,741	32,237	8,862,061	167,896	200,129	15,056	551,156	10,713,276	0
		99n	1,076,491	0	0	824,910	197,271	97,618	768	2,197,058	10
		00o	639,200	21,114	1,280,532	765,385	0	2,740	191,323	2,900,294	10
		00n	197,751	0	0	573,901	0	89,464	504,072	1,365,188	10
	4,4'-Isopropyli-	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	denediphenol	95	56,348	2,377	5,024,865	28,758	824,095	127,796	647,242	6,711,481	121,310
		98o	104,158	71,832	9,043,549	98,999	1,636,775	175,248	843,692	11,974,253	3,476
		98n	0	0	0	0	137,341	2,035	56,554	195,930	0
		99o	229,868	54,608	24,844,350	421,160	576,435	751,791	698,680	27,576,892	3,879
		99n	0	0	0	0	282,439	8,222	36,755	327,416	0
		00o	144,861	53,743	18,345,193	3,328,793	331,849	349,920	623,336	23,177,695	0
		00n	0	0	0	0	359,894	2,662	19,314	381,870	0
	Isosafrole	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	0	0	0	0	0	0	0	0	0
		99o	No reports								
		99n	0	0	0	0	77,000	0	37	77,037	0
		00o	No reports								
		00n	0	0	0	0	16,091	789	0	16,880	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
77501-63-4	*	Lactofen	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	787	0	0	0	787	250	1,037
			98o	1	3	0	0	0	3	0	3
			98n	No reports							
			99o	2	406	0	0	0	406	9	415
			99n	No reports							
			00o	2	290	0	0	0	290	0	290
			00n	No reports							
7439-92-1	**	Lead	88	868	1,128,047	61,776	0	6,648,926	7,838,749	12,276,728	20,115,477
			95	863	730,027	10,645	0	2,367,013	3,107,685	2,552,948	5,660,633
			98o	825	305,563	13,115	8,613	3,266,466	3,593,757	4,849,078	8,442,835
			98n	52	4,832	138	23,068	11,813,624	11,841,662	1,025,994	12,867,656
			99o	812	297,248	8,342	0	1,229,198	1,534,788	3,197,274	4,732,062
			99n	41	4,036	32	13,250	8,383,812	8,401,130	1,388,091	9,789,221
			00o	874	259,233	14,454	2,837	1,063,975	1,340,499	3,734,006	5,074,505
			00n	35	807	125	57,273	9,847,458	9,905,663	1,265,568	11,171,231
--	**	Lead compounds	88	736	1,555,082	180,368	2,755	20,035,359	21,773,564	15,929,201	37,702,765
			95	863	1,228,527	55,000	183,912	13,520,058	14,987,497	19,426,191	34,413,688
			98o	857	854,421	38,811	171,660	16,462,530	17,527,422	16,227,385	33,754,807
			98n	257	350,036	77,013	7,280,139	239,474,639	247,181,827	6,226,070	253,407,897
			99o	824	872,133	31,804	182,869	16,244,192	17,330,998	17,209,828	34,540,826
			99n	235	345,198	33,806	7,959,140	264,104,720	272,442,864	7,125,001	279,567,865
			00o	821	912,965	37,692	212,480	12,412,589	13,575,726	15,559,423	29,135,149
			00n	235	312,829	42,818	8,300,251	316,463,290	325,119,188	3,590,580	328,709,767
58-89-9	*,**	Lindane	88	3	258	0	0	0	258	56	314
			95	10	510	0	0	0	510	20	530
			98o	10	26	5	0	0	31	3	34
			98n	6	53	0	0	25,654	25,707	126	25,833
			99o	9	15	5	0	0	20	18	38
			99n	5	15	1	0	0	16	351	367
			00o	7	10	5	0	0	15	17	32
			00n	3	2	0	0	0	2	0	2
330-55-2	*	Linuron	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	4	270	5	0	5	280	1,250	1,530
			98o	2	1,010	5	0	0	1,015	750	1,765
			98n	1	5	0	0	0	5	0	5
			99o	2	1,010	5	0	0	1,015	750	1,765
			99n	2	5	0	0	0	5	0	5
			00o	2	1,010	5	0	0	1,015	750	1,765
			00n	1	0	0	0	0	0	0	0
554-13-2		Lithium carbonate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	29	15,824	0	0	0	15,824	601,200	617,024
			98o	43	8,144	250	114	32,284	40,792	292,407	333,199
			98n	No reports							
			99o	46	12,013	501	0	250	12,764	192,891	205,655
			99n	1	0	0	0	11,382	11,382	0	11,382
			00o	47	18,672	268	0	0	18,940	189,929	208,869
			00n	1	0	0	0	108,368	108,368	0	108,368

Note. On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information) For lead compounds, applies only to inorganic lead compounds

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Lactofen	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	100	0	0	0	0	1	520	621	1,044
	98o	0	0	0	0	0	89	3	92	0
	98n	No reports								
	99o	0	0	0	0	0	156	406	562	0
	99n	No reports								
	00o	0	0	0	0	0	346	290	636	0
	00n	No reports								
** Lead	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	208,823,623	59,583,829	49,836	5,662	1,631,361	1,918,683	4,466,019	276,479,013	19,059
	98o	249,087,516	37,944,759	242,740	8,259	1,620,424	747,987	7,453,062	297,104,747	424,937
	98n	414	32,124	0	12,582	0	135,054	12,999,482	13,179,656	58
	99o	213,586,064	50,889,448	0	2,724	1,704,114	558,496	5,309,004	272,049,850	7,688
	99n	3,747	243,928	0	0	340,717	165,312	9,405,847	10,159,551	10
	00o	191,717,833	38,539,206	13,780	4,580	3,035,013	393,020	5,744,124	239,447,557	270,853
	00n	0	63,805	0	0	15,359	573,018	10,896,129	11,548,311	0
** Lead compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	501,647,569	297,663,241	0	62,073	28,890,703	7,421,363	27,393,712	863,078,661	3,713,904
	98o	420,774,644	296,829,641	0	19,326	158,767	3,122,012	42,948,937	763,853,327	1,494,476
	98n	8,460,746	1,461,645	0	22,025	149,746	123,507	254,446,413	264,664,082	62,525
	99o	442,481,840	278,123,004	700	15,768	159,175	2,507,776	38,198,706	761,486,969	29,135,559
	99n	482,650	4,640,682	0	0	424,100	171,163	242,651,781	248,370,376	39,001,909
	00o	451,012,242	242,872,853	35	1,795	126,129	3,884,410	38,663,977	736,561,441	2,105,634
	00n	517,702	2,547,849	0	0	422,204	290,020	307,755,779	311,533,554	17,000,057
*,** Lindane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	326	0	0	0	0	3,206	272	3,804	0
	98o	168	0	0	0	0	8,164	126	8,458	0
	98n	0	0	0	100,903	118,134	222	25,833	245,092	0
	99o	1,131	0	0	0	0	60	44	1,235	0
	99n	0	0	0	0	350,078	2,659	193	352,930	0
	00o	225	0	0	0	0	47	32	304	0
	00n	0	0	0	0	130,575	903	2	131,480	0
* Linuron	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	1	0	734	797	1,532	0
	98o	25	0	0	0	0	500	550	1,075	0
	98n	0	0	0	2,214	14,516	0	4	16,734	0
	99o	25	0	0	0	0	500	550	1,075	0
	99n	0	0	0	0	33,900	699	3	34,602	0
	00o	25	0	0	0	0	500	530	1,055	0
	00n	0	0	0	0	17,951	0	0	17,951	0
Lithium carbonate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	18,000	0	0	0	2,200	690	169,247	190,137	446,000
	98o	48,373	0	0	0	1,400	3,266	301,392	354,431	0
	98n	No reports								
	99o	94,352	0	0	0	5,258	3,109	204,549	307,268	16
	99n	0	0	0	0	0	0	11,382	11,382	0
	00o	28,887	0	0	0	10,098	4,661	205,752	249,398	0
	00n	0	0	0	0	0	0	108,368	108,368	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information) For lead compounds, applies only to inorganic lead compounds

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
121-75-5	*	Malathion	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	21	2,512	0	0	0	2,512	31	2,543
			98o	17	2,017	255	0	0	2,272	1,004	3,276
			98n	6	10	0	0	20,222	20,232	159	20,391
			99o	17	5,097	5	0	0	5,102	38	5,140
			99n	3	1	0	0	0	1	0	1
			00o	18	3,903	5	0	0	3,908	268	4,176
			00n	3	1	5	0	0	6	0	6
108-31-6		Maleic anhydride	88	199	676,778	12,580	240,000	250	929,608	132,148	1,061,756
			95	211	347,371	18	5	1,406	348,800	14,429	363,229
			98o	210	357,365	11	0	4,430	361,806	35,131	396,937
			98n	8	35	0	0	150,000	150,035	10	150,045
			99o	208	378,637	5	0	4,449	383,091	5,555	388,646
			99n	9	161	1	0	62,000	62,162	431	62,593
			00o	207	232,023	5	6	299	232,333	42,670	275,003
			00n	6	38	0	0	0	38	250	288
109-77-3		Malononitrile	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	0	0	432,956	0	432,956	0	432,956
			98o	4	510	0	111,100	0	111,610	0	111,610
			98n	1	0	0	0	0	0	0	0
			99o	2	10	5	150,985	5	151,005	0	151,005
			99n	3	7	1	0	0	8	163	171
			00o	1	0	0	255,157	0	255,157	0	255,157
			00n	3	0	0	0	0	0	0	0
12427-38-2	*	Maneb	88	6	2,265	250	0	0	2,515	5,285	7,800
			95	6	273	0	0	0	273	2,461	2,734
			98o	7	5	0	0	0	5	2,288	2,293
			98n	No reports							
			99o	6	0	0	0	0	0	0	0
			99n	No reports							
			00o	4	10	0	0	0	10	250	260
			00n	1	0	0	0	0	0	0	0
7439-96-5		Manganese	88	958	1,587,192	321,993	255	20,229,826	22,139,266	20,087,660	42,226,926
			95	1,624	779,726	117,880	17	8,342,942	9,240,565	13,143,606	22,384,171
			98o	1,862	1,204,779	261,482	3	10,139,533	11,605,797	14,351,253	25,957,050
			98n	61	24,751	147,150	0	10,771,082	10,942,983	1,055,515	11,998,498
			99o	1,898	1,168,808	137,915	5	9,851,153	11,157,881	12,254,951	23,412,832
			99n	51	12,131	140,505	0	8,207,827	8,360,463	999,489	9,359,952
			00o	1,865	920,401	186,789	0	6,117,569	7,224,759	11,436,510	18,661,269
			00n	50	13,072	160,460	2,600	8,470,338	8,646,470	412,756	9,059,226
--		Manganese compounds	88	546	1,801,453	681,469	6,816,070	84,227,842	93,526,834	20,670,928	114,197,762
			95	1,065	2,927,397	1,655,430	10,403,590	41,142,063	56,128,480	28,830,924	84,959,404
			98o	1,267	1,614,013	4,578,108	7,762,910	58,141,059	72,096,090	41,000,915	113,097,005
			98n	377	538,136	1,015,935	858,700	453,355,780	455,768,551	7,713,285	463,481,836
			99o	1,304	1,895,567	4,913,081	7,011,627	55,409,089	69,229,364	36,858,953	106,088,317
			99n	389	578,299	545,648	1,186,500	361,258,366	363,568,813	8,231,944	371,800,757
			00o	1,374	1,673,484	5,078,261	9,514,046	55,940,341	72,206,132	44,554,746	116,760,878
			00n	396	541,326	618,142	1,315,100	352,857,364	355,331,932	7,849,599	363,181,531

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*	Malathion	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	197	0	0	0	0	819	1,073	2,089	0
		98o	1,187	0	0	0	0	1,841	1,649	4,677	0
		98n	0	0	0	0	180,176	0	20,390	200,566	0
		99o	418	0	0	0	0	4,118	4,628	9,164	0
		99n	0	97	0	0	240,221	0	1	240,319	0
		00o	215	0	0	0	0	2,882	3,890	6,987	0
		00n	0	0	0	68,367	160,786	68,656	2	297,811	0
	Maleic anhydride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	4,940	242	3,222,121	102,238	38,356,328	1,154,869	355,050	43,195,788	22,336
		98o	7,607	250	3,857,500	163,967	50,635,701	1,404,589	387,975	56,457,589	12,599
		98n	0	0	0	55,466	79,450	0	150,041	284,957	0
		99o	4,507	272	2,724,748	101,555	43,347,407	1,426,535	376,539	47,981,563	1,527
		99n	0	0	0	222,133	456,582	37,000	62,368	778,083	0
		00o	5,907	0	5,226,962	84,839	37,680,577	862,066	268,916	44,129,267	796
		00n	0	0	0	319,620	164,554	793	80	485,047	0
	Malononitrile	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	432,956	432,956	0
		98o	0	0	0	0	336,000	0	111,214	447,214	0
		98n	0	0	0	0	0	0	0	0	0
		99o	0	0	0	0	22,000	0	151,009	173,009	0
		99n	0	0	0	0	191,547	0	166	191,713	0
		00o	0	0	0	0	0	0	255,157	255,157	0
		00n	0	0	0	0	104,381	782	0	105,163	0
*	Maneb	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	525	0	0	3	0	8,800	7,861	17,189	0
		98o	35	0	0	0	0	8,521	2,058	10,614	0
		98n	No reports								
		99o	0	0	0	0	0	10,113	2,853	12,966	0
		99n	No reports								
		00o	0	0	0	0	60	2,096	1	2,157	0
		00n	0	0	0	0	93,403	0	0	93,403	0
	Manganese	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	30,253,675	74,174,762	0	141	173,579	1,907,753	21,520,319	128,030,229	591
		98o	39,084,726	51,725,843	0	543	531,898	903,937	24,011,707	116,258,654	623,751
		98n	960	171,563	0	0	113,857	0	11,998,782	12,285,162	0
		99o	42,774,116	69,300,440	0	1	152,666	542,243	22,408,216	135,177,682	18,809,964
		99n	330	179,140	0	0	49,506	0	9,357,057	9,586,033	0
		00o	42,254,442	67,902,661	0	25	101,522	423,098	16,718,791	127,400,539	818
		00n	0	137,483	0	0	540	0	9,046,954	9,184,977	211,091
	Manganese compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	146,216,939	88,053,869	0	199,783	1,021,862	5,856,439	78,881,791	320,230,683	1,350,500
		98o	17,327,651	48,063,300	22,153	35,980	1,915,470	5,355,141	119,452,848	192,172,543	332,327
		98n	88,853	108,315	0	0	3,909	73,171	462,804,513	463,078,761	70,900
		99o	18,812,905	45,540,625	2,876	58,511	1,534,943	1,369,889	111,504,664	178,824,413	158,128
		99n	769,291	758,200	0	0	15,186	83,200	324,845,943	326,471,820	47,000,000
		00o	43,631,624	48,757,736	776	51,636	3,599,200	1,281,525	120,658,803	217,981,300	161,669
		00n	619,231	768,087	0	0	82,973	78,990	343,770,894	345,320,175	20,000,001

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
93-65-2	**	Mecoprop	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	9	1,816	0	0	0	1,816	2,304	4,120
			98o	10	1,150	0	0	250	1,400	3,968	5,368
			98n	No reports							
			99o	12	1,123	0	0	250	1,373	2,368	3,741
			99n	1	2	0	0	0	2	64	66
			00o	14	659	0	0	250	909	1,113	2,022
			00n	No reports							
149-30-4	*	2-Mercaptobenzo-thiazole	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	28	34,857	5	97,000	260	132,122	376,420	508,542
			98o	38	5,792	100,823	45,000	250	151,865	146,951	298,816
			98n	1	0	0	0	250,000	250,000	0	250,000
			99o	35	5,696	66,893	37,000	0	109,589	140,100	249,689
			99n	1	0	0	0	176,304	176,304	0	176,304
			00o	31	4,340	35,288	10,000	0	49,628	223,095	272,723
			00n	1	0	0	0	166,126	166,126	0	166,126
7439-97-6	*	Mercury	88	37	22,905	1,397	0	13,279	37,581	258,718	296,299
			95	24	13,262	192	0	1,016	14,470	14,228	28,698
			98o	24	12,591	134	0	3,069	15,794	14,827	30,621
			98n	11	9,416	0	0	236,003	245,419	14,419	259,838
			99o	33	11,275	133	0	2,419	13,827	6,575	20,402
			99n	15	9,426	0	0	98,316	107,742	14,957	122,699
		Not comparable	00o	424	23,509.56	162.34	258.70	5,223.62	29,154.23	20,505.89	49,660.12
		to prior years***	00n	142	6,323.57	229.96	1,118.00	33,221.56	40,893.09	3,984.39	44,877.48
--		Mercury	88	15	2,376	9	27	0	2,412	17,916	20,328
		compounds	95	10	3,156	136	6	0	3,298	207,097	210,395
			98o	11	2,372	34	0	2,550	4,956	19,848	24,804
			98n	11	4,870	22	0	8,969,110	8,974,002	72,802	9,046,804
			99o	13	2,110	36	0	5,700	7,846	53,046	60,892
			99n	17	3,397	9	0	2,968,271	2,971,677	89,129	3,060,806
		Not comparable	00o	467	31,247 20	579 84	76.52	13,666 01	45,569.58	93,779.94	139,349.51
		to prior years***	00n	563	103,412.20	1,330 13	10,260 30	3,236,170 29	3,351,172.93	731,602 10	4,082,775.03
150-50-5	*	Merphos	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	186	0	0	0	186	0	186
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	1	0	13	0	0	13	0	13
			99n	No reports							
			00o	2	0	4	0	0	4	270	274
			00n	No reports							
126-98-7		Methacrylonitrile	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	6	945	0	606,939	0	607,884	0	607,884
			98o	6	900	0	107,076	0	107,976	0	107,976
			98n	2	800	0	0	0	800	0	800
			99o	6	950	0	102,418	0	103,368	0	103,368
			99n	3	112	1	0	22,932	23,045	12,387	35,432
			00o	6	989	0	59,399	0	60,388	0	60,388
			00n	4	2	0	0	0	2	0	2

Note. On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
** Mecoprop	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	15,614	0	0	0	940	1,037	3,659	21,250	0
	98o	872	0	0	1,000	500	451	4,887	7,710	0
	98n	No reports								
	99o	2,611	0	0	0	440	632	3,587	7,270	0
	99n	0	0	0	0	11,879	0	67	11,946	0
	00o	5,179	0	0	0	160	5,348	1,869	12,556	0
	00n	No reports								
* 2-Mercaptobenzo-thiazole	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	5,405	104,645	0	931,100	128,323	136,948	516,905	1,823,326	630
	98o	1,780	8,475	0	800,961	513,059	76,774	298,521	1,699,570	0
	98n	0	0	0	0	0	0	250,000	250,000	0
	99o	207,850	50,116	0	601,890	527,221	11,170	255,458	1,653,705	0
	99n	0	0	0	0	0	0	176,304	176,304	0
	00o	465,590	41,684	0	300,358	596,634	9,247	276,751	1,690,264	0
	00n	0	0	0	0	0	0	166,126	166,126	0
* Mercury	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	413,832	58,151	0	0	6,307	11,009	17,996	507,295	0
	98o	455,629	34,068	0	0	4,315	1,165	20,609	515,786	0
	98n	0	3,706	0	0	0	0	260,437	264,143	0
	99o	471,573	37,684	0	0	4,021	5,495	18,724	537,497	10
	99n	0	4,888	0	0	0	0	122,295	127,183	0
Not comparable	00o	298,026.02	54,944.08	67.73	55.01	11.23	3,131.69	45,697.84	401,933.60	4,305.71
to prior years***	00n	3,656.85	9,768.91	0.00	14.00	354.30	2,203.07	42,259.25	58,256.38	598.00
Mercury	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
compounds	95	125,287	0	0	61	0	4,597	25,638	155,583	179,000
	98o	573,026	5	0	0	0	5,411	18,413	596,855	860
	98n	65,400	114,138	0	0	0	236	9,046,364	9,226,138	0
	99o	390,415	2,789	0	0	0	187	57,982	451,373	2,400
	99n	43,155	87,463	0	0	0	550	3,042,245	3,173,413	15,000
Not comparable	00o	288,739.48	5,115.82	10.00	33 00	780 51	427.74	149,363 95	444,470 50	7,238.16
to prior years***	00n	56,517 70	92,100.66	0.00	24 00	18,622 24	102 10	3,803,836.64	3,971,203.34	6,002.01
* Merphos	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	186	186	0
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	0	0	0	0	155	12	13	180	0
	99n	No reports								
	00o	0	0	0	0	185	274	4	463	0
	00n	No reports								
Methacrylonitrile	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	3,189	0	607,884	611,073	0
	98o	0	0	0	0	500	0	107,976	108,476	0
	98n	0	0	0	1,891,340	0	0	800	1,892,140	0
	99o	0	0	0	0	320	0	103,368	103,688	0
	99n	0	0	0	0	73,099	0	35,431	108,530	0
	00o	0	0	0	0	480	0	60,343	60,823	45
	00n	0	0	0	0	49,252	804	2	50,058	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988).
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	On-site Releases: Surface Water Discharges Pounds	On-site Releases: Underground Injection Pounds	On-site Releases: Releases to Land Pounds	On-site Releases: Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
137-42-8	*	Metham sodium	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	11	4,387	1	0	252	4,640	13,050	17,690
			98o	9	5,714	40	0	110	5,864	800	6,664
			98n	2	824	0	0	22,248	23,072	0	23,072
			99o	9	6,357	40	0	110	6,507	220	6,727
			99n	1	3,627	0	0	0	3,627	0	3,627
			00o	9	5,046	40	0	0	5,086	15	5,101
			00n	1	4,316	0	0	0	4,316	0	4,316
67-56-1	*	Methanol	88	2,507	259,691,589	17,139,114	26,587,686	11,911,136	315,329,525	15,290,643	330,620,168
			95	2,489	217,631,997	9,223,362	27,738,543	1,776,256	256,370,158	2,004,802	258,374,960
			98o	2,250	189,068,038	5,783,765	16,681,250	1,800,649	213,333,702	914,296	214,247,998
			98n	373	945,322	5,144	1,125,538	605,659	2,681,663	93,260	2,774,923
			99o	2,179	185,159,387	3,841,425	14,190,039	1,248,946	204,439,797	1,370,499	205,810,296
			99n	360	948,407	8,905	1,992,807	707,037	3,657,156	115,253	3,772,409
			00o	2,161	182,267,111	3,744,637	14,348,673	1,416,925	201,777,346	1,171,531	202,948,877
			00n	357	909,115	9,294	4,004,559	411,287	5,334,255	283,215	5,617,470
20354-26-1	*	Methazole	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
2032-65-7	*	Methiocarb	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	2	0	0	0	0	0	0	0
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	No reports							
			00n	No reports							
94-74-6	*,**	Methoxone	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	5	1,261	0	0	0	1,261	1,810	3,071
			98o	6	1,255	0	0	250	1,505	3,749	5,254
			98n	No reports							
			99o	5	780	0	0	250	1,030	2,887	3,917
			99n	2	2	0	0	0	2	314	316
			00o	5	758	0	0	250	1,008	863	1,871
			00n	1	0	0	0	0	0	32	32
3653-48-3	*,**	Methoxone, sodium salt	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Metham sodium	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	33,520	0	0	0	102	362	15,378	49,362	0
	98o	100	0	0	0	355	3,324	6,354	10,133	1,000
	98n	0	0	0	0	0	0	24,392	24,392	0
	99o	100	0	0	0	748	10,472	6,866	18,186	100
	99n	9,000	0	0	0	0	5,970	3,600	18,570	0
	00o	0	0	0	843	1,190	8,911	5,335	16,279	40
	00n	0	0	0	0	0	0	4,316	4,316	0
* Methanol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	441,801,827	28,205,153	376,980,271	94,117,696	955,830,551	120,190,641	262,695,641	2,279,821,780	295,055
	98o	620,599,834	12,873,649	299,298,472	96,297,134	1,064,500,943	125,970,938	215,450,270	2,434,991,240	110,144
	98n	3,745,955	130,289	8,256,769	33,838,262	15,712,702	2,607,799	2,872,728	67,164,504	1,902
	99o	621,966,461	23,822,897	418,675,331	103,124,011	1,084,014,774	116,980,718	207,378,840	2,575,963,032	189,736
	99n	3,938,198	33,549	5,534,648	21,948,890	17,700,880	2,398,376	3,689,138	55,243,679	5,713
	00o	645,077,629	19,376,706	373,719,996	123,182,850	1,194,367,447	128,894,338	210,004,153	2,694,623,118	177,937
	00n	4,866,471	24,454	214,120	24,251,263	17,754,199	2,810,665	5,516,191	55,437,363	81,027
* Methazole	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
* Methiocarb	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	0	0	0	0	0	0	0	0	0
	99n	No reports								
	00o	No reports								
	00n	No reports								
*,** Methoxone	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	19,510	0	0	0	58	27	3,144	22,739	0
	98o	6,670	0	0	0	0	1,301	5,417	13,388	0
	98n	No reports								
	99o	1,092	0	0	0	0	723	4,226	6,041	0
	99n	0	0	0	0	110,530	0	97	110,627	0
	00o	3,007	0	0	0	0	4,208	2,248	9,463	0
	00n	0	0	0	0	90,180	0	32	90,212	0
*,** Methoxone, sodium salt	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								

Note. Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	On-site Releases: Surface Water Discharges Pounds	On-site Releases: Underground Injection Pounds	On-site Releases: Releases to Land Pounds	On-site Releases: Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
72-43-5	*	Methoxychlor	88	12	131,031	252	0	258	131,541	8	131,549
			95	2	0	0	0	0	0	0	0
			98o	4	0	0	0	0	0	0	0
			98n	4	12	0	0	25,474	25,486	0	25,486
			99o	5	0	0	0	0	0	0	0
			99n	3	29	0	0	0	29	14	43
		Not comparable	00o	6	36.00	0.00	0.00	0.00	36.00	1.60	37.60
		to prior years***	00n	14	23.83	0.00	0.00	2,569.00	2,592.83	30.15	2,622.98
109-86-4	*	2-Methoxyethanol	88	95	5,899,669	40,520	750	7	5,940,946	57,362	5,998,308
			95	48	898,128	12,407	0	5	910,540	536	911,076
			98o	52	1,019,820	16,882	0	400	1,037,102	84	1,037,186
			98n	14	329	0	51,963	0	52,292	884	53,176
			99o	41	972,349	20,648	0	17,098	1,010,095	16,545	1,026,640
			99n	14	121	1	0	56,000	56,122	889	57,011
			00o	40	886,226	22,286	0	400	908,912	61,795	970,707
			00n	9	11	0	0	17,841	17,852	120	17,972
96-33-3		Methyl acrylate	88	61	443,496	1,687	200	30,260	475,643	4,765	480,408
			95	71	335,178	5,962	159	0	341,299	865	342,164
			98o	64	246,310	761	53,244	0	300,315	50,575	350,890
			98n	8	24,273	0	0	14,000	38,273	3,680	41,953
			99o	63	303,175	624	51,742	267	355,808	28,796	384,604
			99n	4	2,216	0	0	0	2,216	498,922	501,138
			00o	63	317,505	294	13,670	0	331,469	26,857	358,326
			00n	4	2,773	0	0	0	2,773	0	2,773
1634-04-4		Methyl tert-butyl ether	88	90	2,588,247	21,499	14,400	370	2,624,516	4,602	2,629,118
			95	185	3,300,759	78,555	15,238	3,800	3,398,352	47,841	3,446,193
			98o	209	2,656,910	60,650	47,357	325	2,765,242	216,391	2,981,633
			98n	329	1,555,782	7,197	250	2,884	1,566,113	46,503	1,612,616
			99o	189	2,469,175	118,824	20,477	5,586	2,614,062	235,645	2,849,707
			99n	302	1,301,043	2,388	0	1,020	1,304,451	22,642	1,327,093
			00o	190	2,323,996	118,447	31,236	8,311	2,481,990	1,587	2,483,577
			00n	277	1,129,687	5,581	0	2,245	1,137,513	30,416	1,167,929
79-22-1		Methyl chloro-carbonate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	4	2,895	5	0	5	2,905	0	2,905
			98o	4	2,352	5	0	5	2,362	0	2,362
			98n	1	0	0	0	0	0	0	0
			99o	4	3,203	5	0	5	3,213	0	3,213
			99n	3	31	1	0	0	32	162	194
			00o	5	2,743	5	0	5	2,753	0	2,753
			00n	3	0	0	0	0	0	0	0
101-14-4	**	4,4'-Methylenebis (2-chloroaniline)	88	8	250	0	0	0	250	0	250
			95	23	260	0	0	0	260	5	265
			98o	23	20	0	0	0	20	0	20
			98n	1	0	0	0	0	0	0	0
			99o	17	10	0	0	0	10	0	10
			99n	3	30	1	0	8,189	8,220	4,419	12,639
			00o	20	15	0	0	0	15	0	15
			00n	3	0	0	0	26,154	26,154	0	26,154

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*	Methoxychlor	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	0	0	0
		98o	0	0	0	0	0	0	0	0	0
		98n	0	0	0	0	30,194	0	25,486	55,680	0
		99o	0	0	0	0	0	0	0	0	0
		99n	0	0	0	0	206,422	0	43	206,465	0
	Not comparable	00o	0.00	0.00	225.00	0.00	0.00	15.60	40.81	281.41	0.00
	to prior years***	00n	0.00	0.00	0.00	755.00	290,474.16	416.00	2,641.83	294,286.99	0.00
*	2-Methoxyethanol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	3,925,200	74,000	240,658	1,885,948	3,357,857	1,228,013	904,103	11,615,779	726
		98o	279,700	151,007	742,247	1,764,385	3,343,057	499,209	1,093,500	7,873,105	402
		98n	137	0	0	1,275,726	150,702	0	53,249	1,479,814	0
		99o	710,480	200,000	1,236,963	510,648	3,591,280	496,600	1,019,189	7,765,160	0
		99n	573	0	0	34,972	254,416	0	57,116	347,077	0
		00o	940,000	100,000	1,341,175	573,592	3,482,838	438,169	899,672	7,775,446	428
		00n	0	0	0	0	182,572	0	17,975	200,547	0
	Methyl acrylate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	910,001	40,769	736,924	249,260	2,132,688	51,535	346,087	4,467,264	248
		98o	1,067,301	0	702,681	458,653	3,323,941	75,468	422,545	6,050,589	0
		98n	0	0	0	291,314	88,974	163	18,343	398,794	25,186
		99o	942,001	140	545,151	648,816	2,397,322	232,427	380,856	5,146,713	0
		99n	0	0	0	6,441	43,108	38	2,201	51,788	498,921
		00o	938,941	70	558,435	644,930	1,937,130	98,691	352,765	4,530,962	0
		00n	0	0	0	129,127	622	18	8,490	138,257	0
	Methyl tert-butyl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	ether	95	847,069	32,815	228,033	1,360,313	3,020,968	522,838	3,430,405	9,442,441	117,518
		98o	2,207,480	170,245	1,798,255	3,330,091	6,340,851	1,233,832	3,016,593	18,097,347	1,765
		98n	2,462,506	1,800,430	0	188,044	2,628,152	193,278	3,424,465	10,696,875	32,711
		99o	2,998,495	682	2,063,051	3,391,282	17,686,628	1,081,736	2,586,765	29,808,639	297,862
		99n	5,250,530	135,600	5,519	1,091,655	3,515,274	208,528	1,266,848	11,473,954	5,583
		00o	2,553,355	214	3,791,486	4,754,760	13,469,302	1,023,899	2,621,822	28,214,838	2,438
		00n	3,472,890	323,252	9,573	1,123,997	3,195,197	313,229	1,303,846	9,741,984	8,276
	Methyl chloro-	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	carbonate	95	0	0	0	0	3,610	0	2,897	6,507	0
		98o	0	0	0	0	51,910	0	3,030	54,940	0
		98n	0	0	0	0	0	0	0	0	0
		99o	0	0	0	0	39,801	0	3,023	42,824	0
		99n	0	0	0	0	173,861	0	190	174,051	0
		00o	0	0	0	0	29,196	0	3,083	32,279	0
		00n	0	0	0	0	106,300	781	0	107,081	0
**	4,4'-Methylenebis	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	(2-chloroaniline)	95	720	0	0	1,872	36	10,345	37	13,010	0
		98o	0	0	0	4,169	0	9,787	10	13,966	0
		98n	0	0	0	0	0	0	0	0	0
		99o	0	0	0	2,997	0	9,305	6	12,308	0
		99n	0	0	0	0	133,212	0	12,635	145,847	0
		00o	0	0	0	8,910	0	5,608	9	14,527	0
		00n	0	0	0	0	16,117	790	26,154	43,061	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
101-61-1	**	4,4'-Methylenebis (N,N-dimethyl) benzenamine	88	1	250	0	0	7,000	7,250	1,150	8,400
			95	2	10	0	0	0	10	0	10
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							
74-95-3		Methylene bromide	88	9	57,723	0	0	0	57,723	0	57,723
			95	5	63,091	0	0	0	63,091	0	63,091
			98o	5	46,153	0	0	0	46,153	0	46,153
			98n	3	160	0	0	0	160	0	160
			99o	3	12,352	0	0	0	12,352	29	12,381
			99n	1	15	1	0	0	16	7	23
			00o	3	4,334	0	0	0	4,334	32,851	37,185
			00n	2	1	0	0	0	1	0	1
101-77-9	**	4,4'-Methylene-dianiline	88	31	130,265	2,599	460,250	1,140	594,254	141,538	735,792
			95	25	10,337	63	23,110	0	33,510	9,423	42,933
			98o	25	9,073	5,041	51,200	0	65,314	6,867	72,181
			98n	1	0	0	0	0	0	0	0
			99o	23	9,199	4,248	33,000	8	46,455	31,768	78,223
			99n	1	0	0	0	0	0	0	0
			00o	23	12,908	296	30,000	8	43,212	6,550	49,762
			00n	No reports							
78-93-3	*	Methyl ethyl ketone	88	2,534	141,566,241	92,216	255,955	166,688	142,081,100	5,014,726	147,095,826
			95	2,324	70,338,506	65,787	581,632	172,000	71,157,925	286,984	71,444,909
			98o	1,915	46,632,516	55,937	343,418	118,304	47,150,175	844,254	47,994,429
			98n	290	220,956	7	52,251	130	273,344	215,048	488,392
			99o	1,761	38,446,895	35,309	426,252	94,297	39,002,753	787,150	39,789,903
			99n	279	186,797	15	65,858	168,607	421,277	647,992	1,069,269
			00o	1,684	33,840,908	40,413	200,492	30,062	34,111,875	863,107	34,974,982
			00n	281	210,981	280	66,757	88,604	366,622	178,426	545,048
60-34-4		Methyl hydrazine	88	3	2,927	1	0	0	2,928	1,450	4,378
			95	3	500	0	0	0	500	0	500
			98o	3	265	0	0	0	265	0	265
			98n	No reports							
			99o	4	401	0	0	0	401	0	401
			99n	2	6	0	0	0	6	195	201
			00o	2	283	0	0	0	283	0	283
			00n	1	0	0	0	0	0	0	0
74-88-4		Methyl iodide	88	3	8,944	5	250	0	9,199	250	9,449
			95	6	21,618	0	10,000	0	31,618	8,600	40,218
			98o	10	65,167	45	131	1,357	66,700	329	67,029
			98n	2	0	0	0	0	0	0	0
			99o	10	67,682	7	24	742	68,455	0	68,455
			99n	3	215	1	0	17,745	17,961	9,575	27,536
			00o	11	71,661	22	8	1,002	72,693	64	72,757
			00n	3	1	0	0	0	1	0	1

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
**	4,4'-Methylenebis (N,N-dimethyl) benzenamine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	10	10	0
		98o	0	0	0	0	0	0	0	0	0
		98n	No reports								
		99o	0	0	0	0	0	0	0	0	0
		99n	No reports								
		00o	0	0	0	0	0	0	0	0	0
		00n	No reports								
	Methylene bromide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	677,059	0	0	0	51,903	979	62,284	792,225	0
		98o	1,500,000	0	0	0	0	0	46,135	1,546,135	0
		98n	0	0	0	64,300	354,774	0	160	419,234	0
		99o	40	0	0	0	0	0	12,348	12,388	0
		99n	0	0	0	0	37,000	0	19	37,019	0
		00o	44	0	0	0	0	0	37,542	37,586	0
		00n	0	0	0	0	17,354	772	1	18,127	0
**	4,4'-Methylene-dianiline	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	2,300	0	17,801	17,405	87,919	94,872	35,337	255,634	7
		98o	2,830	0	311,271	11,793	407,691	56,581	66,591	856,757	1
		98n	0	0	0	0	11,263	0	0	11,263	0
		99o	6,205	0	45,995	4,157	263,766	99,971	48,589	468,683	8
		99n	0	0	0	0	12,386	0	0	12,386	0
		00o	9,920	0	30,467	1,199	17,499	66,871	48,429	174,385	0
		00n	No reports								
*	Methyl ethyl ketone	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	67,669,904	21,177,044	113,046,749	43,718,933	71,396,549	6,679,130	70,242,299	393,930,608	229,484
		98o	56,948,988	19,621,764	80,938,625	33,531,589	81,284,243	7,965,722	48,521,195	328,812,126	169,325
		98n	16,591,003	1,888,930	119,057	41,289,795	5,164,871	5,038,845	323,245	70,415,746	12,252
		99o	51,863,856	16,726,368	96,040,537	32,583,425	83,263,280	9,534,964	39,684,496	329,696,926	436,801
		99n	17,769,041	7,263	140,361	32,941,917	7,182,256	6,722,176	477,213	65,240,227	39,420
		00o	48,587,686	15,752,866	98,965,210	33,096,101	76,044,033	7,375,725	34,880,922	314,702,543	118,251
		00n	16,345,116	34,627	242,860	34,494,261	9,399,249	4,965,999	1,761,195	67,243,307	1,688
	Methyl hydrazine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	20	5	400	425	0
		98o	0	0	0	0	6,508	192	370	7,070	0
		98n	No reports								
		99o	0	0	0	0	3,405	5,967	506	9,878	0
		99n	0	0	0	0	127,742	0	201	127,943	0
		00o	0	0	0	0	1,478	4,345	388	6,211	0
		00n	0	0	0	0	73,146	0	0	73,146	0
	Methyl iodide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	140	0	19,376	760	40,187	60,463	59
		98o	0	0	0	0	184,842	31,143	66,328	282,313	420
		98n	0	0	0	0	0	0	0	0	0
		99o	0	0	4,300	0	24,001	358	68,906	97,565	0
		99n	0	0	0	0	118,249	0	27,535	145,784	0
		00o	50	0	4,900	0	16,514	64,927	71,591	157,982	99
		00n	0	0	0	0	32,177	781	1	32,959	0

Note. Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
108-10-1	*	Methyl isobutyl ketone	88	1,012	32,035,833	762,108	116,650	31,770	32,946,361	1,966,488	34,912,849
			95	1,033	22,081,485	51,292	158,600	7,041	22,298,418	88,607	22,387,025
			98o	836	15,031,324	17,655	75,950	13,846	15,138,775	165,515	15,304,290
			98n	208	33,691	0	250	45	33,986	37,568	71,554
			99o	791	14,331,744	19,591	79,800	21,724	14,452,859	170,427	14,623,286
			99n	211	32,938	1	0	26,815	59,754	66,557	126,311
			00o	771	12,708,055	32,747	78,900	18,162	12,837,864	61,814	12,899,678
			00n	196	40,162	252	5	45,097	85,516	65,421	150,937
624-83-9		Methyl isocyanate	88	12	10,235	0	0	64	10,299	8,400	18,699
			95	6	1,658	0	0	0	1,658	0	1,658
			98o	6	507	0	0	5	512	0	512
			98n	No reports							
			99o	4	438	0	0	1	439	0	439
			99n	2	4	0	0	0	4	153	157
			00o	5	669	0	0	0	669	0	669
			00n	1	0	0	0	0	0	0	0
556-61-6	*	Methyl isothio-cyanate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	1,586	0	0	0	1,586	0	1,586
			98o	3	1,359	0	0	0	1,359	0	1,359
			98n	No reports							
			99o	3	1,091	0	0	0	1,091	0	1,091
			99n	No reports							
			00o	3	1,136	0	0	0	1,136	0	1,136
			00n	No reports							
75-86-5		2-Methyllacto-nitrile	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	5	3,852	0	0	0	3,852	0	3,852
			98o	7	3,973	0	56,698	0	60,671	0	60,671
			98n	2	10	0	24,000	0	24,010	147	24,157
			99o	6	3,772	0	55,487	0	59,259	0	59,259
			99n	3	3	0	15,000	0	15,003	169	15,172
			00o	5	2,811	0	139,007	0	141,818	0	141,818
			00n	2	0	0	21,000	0	21,000	76	21,076
80-62-6		Methyl meth-acrylate	88	218	3,630,569	28,437	327,220	8,119	3,994,345	276,567	4,270,912
			95	267	2,130,734	1,672	120,000	1,056	2,253,462	124,867	2,378,329
			98o	288	2,254,988	437,470	150,000	1,872	2,844,330	332,939	3,177,269
			98n	14	11,821	0	17,206	9,700	38,727	1,418	40,145
			99o	298	2,632,383	3,343	62,000	7,904	2,705,630	508,265	3,213,895
			99n	19	6,086	1	0	43,660	49,747	24,584	74,331
			00o	306	2,708,026	3,175	230,000	649	2,941,850	149,325	3,091,175
			00n	20	18,752	292	0	30,673	49,717	1,805	51,522
924-42-5		N-Methylol-acrylamide	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	29	2,835	1,171	0	38	4,044	13	4,057
			98o	36	5,473	1,245	0	45	6,763	24,987	31,750
			98n	No reports							
			99o	35	6,178	1,259	0	53	7,490	3,648	11,138
			99n	No reports							
			00o	32	4,052	1,050	0	41	5,143	5,510	10,653
			00n	1	0	0	0	0	0	0	0

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Methyl isobutyl ketone	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	52,705,598	16,414,014	27,186,503	18,142,083	17,815,572	1,925,979	22,338,883	156,528,632	49,931
	98o	58,935,157	10,808,954	28,643,209	10,717,438	14,355,260	2,754,391	15,301,172	141,515,581	166,597
	98n	5,155,860	110,732	21,764	15,671,142	1,875,406	1,569,508	51,338	24,455,750	1,744
	99o	45,930,949	11,511,784	28,131,633	9,964,501	14,261,565	2,019,121	14,692,781	126,512,334	333,729
	99n	5,991,094	144,994	16,000	15,612,606	3,525,102	2,403,097	88,403	27,781,296	5,139
	00o	48,254,482	11,680,968	20,105,666	9,824,397	15,983,586	2,434,889	12,991,356	121,275,344	110,011
	00n	9,337,665	739	76,277	11,258,491	4,308,570	1,792,690	676,243	27,450,675	538
Methyl isocyanate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	66,939	0	1,658	68,597	0
	98o	0	0	0	3,450	90,771	0	497	94,718	5
	98n	No reports								
	99o	0	0	0	0	6,393	32	2,310	8,735	0
	99n	0	0	0	0	111,931	0	157	112,088	0
	00o	0	0	0	0	87,251	0	668	87,919	0
	00n	0	0	0	0	67,878	0	0	67,878	0
* Methyl isothiocyanate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	62	0	82	1,586	1,730	0
	98o	0	0	0	0	0	120	1,359	1,479	0
	98n	No reports								
	99o	0	0	0	48	0	72	1,091	1,211	0
	99n	No reports								
	00o	0	0	0	338	0	113	1,136	1,587	0
	00n	No reports								
2-Methyllactonitrile	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	24,052	0	3,853	27,905	0
	98o	0	0	0	0	9,268	0	61,231	70,499	1
	98n	0	0	0	0	0	6	24,010	24,016	0
	99o	0	0	0	0	9,280	5	59,252	68,537	0
	99n	0	0	0	0	98,944	3	15,105	114,052	0
	00o	0	0	0	0	9,330	2	141,861	151,193	0
	00n	0	0	0	0	69,747	3	21,000	90,750	0
Methyl methacrylate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	4,665,497	20,746	2,049,934	1,396,710	5,135,771	697,747	2,275,853	16,242,258	3,234
	98o	1,483,426	58,753	2,254,439	1,794,064	4,004,435	578,962	3,193,032	13,367,111	8,246
	98n	63,000	0	0	942,771	962,274	9,146	34,953	2,012,144	0
	99o	1,766,009	47,419	1,979,196	2,111,820	5,487,348	786,030	3,365,560	15,543,382	17,398
	99n	76,679	0	0	225,772	703,641	3,836	73,830	1,083,758	0
	00o	1,635,431	92,197	4,384,567	2,253,557	4,943,289	718,983	3,060,194	17,088,218	1,337
	00n	106,047	0	1,020	345,112	607,786	84,366	39,803	1,184,134	0
N-Methylolacrylamide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	360	0	0	294	14,277	4,373	3,096	22,400	0
	98o	0	113	0	0	12,400	7,425	31,759	51,697	99
	98n	No reports								
	99o	0	120	0	0	12,607	8,373	11,151	32,251	0
	99n	No reports								
	00o	0	0	0	24,460	4,550	15,278	10,661	54,949	0
	00n	0	0	0	0	32,133	0	0	32,133	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	On-site Releases: Surface Water Discharges Pounds	On-site Releases: Underground Injection Pounds	On-site Releases: Releases to Land Pounds	On-site Releases: Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
298-00-0	*	Methyl parathion	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	5	1,442	0	0	0	1,442	2,684	4,126
			98o	5	189	0	0	0	189	0	189
			98n	No reports							
			99o	5	15	0	0	0	15	0	15
			99n	1	0	0	0	0	0	0	0
			00o	5	1	0	0	0	1	0	1
			00n	2	0	0	0	0	0	0	0
109-06-8		2-Methylpyridine	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	8	89,938	0	61,720	0	151,658	40	151,698
			98o	7	3,008	0	38,900	0	41,908	813	42,721
			98n	1	0	0	0	0	0	0	0
			99o	7	16,926	0	50,100	0	67,026	6	67,032
			99n	3	13	1	0	0	14	258	272
			00o	8	19,841	22	24,000	0	43,863	0	43,863
			00n	3	5	0	0	0	5	0	5
872-50-4		N-Methyl-2-pyrrolidone	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	278	2,717,710	201,221	779,477	135,050	3,833,458	391,111	4,224,569
			98o	403	3,005,987	42,961	2,865,692	99,411	6,014,051	495,554	6,509,605
			98n	80	19,320	0	0	0	19,320	3,165	22,485
			99o	406	3,349,489	35,538	2,945,457	96,877	6,427,361	550,466	6,977,827
			99n	86	22,284	0	0	43,322	65,606	87,564	153,170
			00o	405	3,081,345	13,510	2,022,037	107,624	5,224,516	878,669	6,103,185
			00n	86	28,153	5,142	0	42,536	75,831	41,122	116,953
9006-42-2	*	Metiram	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
21087-64-9	*	Metribuzin	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	1,936	9	0	0	1,945	0	1,945
			98o	8	339	26	0	0	365	255	620
			98n	No reports							
			99o	9	397	68	0	1	466	250	716
			99n	1	0	0	0	0	0	0	0
			00o	6	103	7	0	0	110	0	110
			00n	1	0	0	0	0	0	0	0
7786-34-7	*	Mevinphos	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	No reports							
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

	Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*	Methyl parathion	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	29	0	0	0	0	0	3,664	3,693	0
		98o	0	0	0	0	0	47,000	8,531	55,531	0
		98n	No reports								
		99o	0	0	0	0	0	23,992	6,501	30,493	0
		99n	0	0	0	0	21,609	0	0	21,609	0
		00o	0	0	0	0	0	11,653	1	11,654	0
		00n	0	0	0	0	62,814	74	0	62,888	0
	2-Methylpyridine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	57,000	19,000	470	37,000	98,212	150,962	362,644	930
		98o	0	140,000	42,139	12	3	330	42,748	225,232	0
		98n	0	0	0	0	0	0	0	0	0
		99o	0	170,000	34,963	5,110	40,610	1,475	67,075	319,233	1,000
		99n	0	0	0	0	267,046	0	267	267,313	0
		00o	4,400	130,000	36,959	4,200	43,180	2,652	43,876	265,267	0
		00n	0	0	0	0	165,962	774	5	166,741	0
	N-Methyl-2-pyrrolidone	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	1,477,378	6,547,234	182,638	2,387,644	5,116,412	3,410,100	4,486,019	23,607,425	977
		98o	425,294	7,409,124	2,802,735	3,600,267	5,278,880	3,892,070	6,623,922	30,032,292	4,486
		98n	8,817,169	6	391	2,520,061	874,778	336,965	22,239	12,571,609	0
		99o	691,547	6,441,224	5,920,945	4,466,902	4,679,420	3,768,786	6,954,546	32,923,370	452
		99n	7,179,672	971,015	1,850	3,962,632	913,836	1,335,420	66,837	14,431,262	10
		00o	688,009	15,899,441	5,021,479	9,529,555	5,828,253	3,427,890	5,812,849	46,207,476	1,052
		00n	6,320,858	858,557	1,711	7,895,334	923,014	175,182	200,820	16,375,476	10
*	Metiram	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
*	Metribuzin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	3,502	5,423	3,519	12,444	0
		98o	0	0	0	0	4,596	48,209	140	52,945	0
		98n	No reports								
		99o	0	0	0	0	19,899	63,938	7,849	91,686	0
		99n	0	0	0	0	19,614	0	0	19,614	0
		00o	0	0	0	0	4,779	21,199	7,307	33,285	0
		00n	0	0	0	0	19,614	0	0	19,614	0
*	Mevinphos	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	0	0	0
		98o	0	0	0	0	0	0	0	0	0
		98n	No reports								
		99o	0	0	0	0	0	0	0	0	0
		99n	No reports								
		00o	No reports								
		00n	No reports								

Note. Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
90-94-8	**	Michler's ketone	88	4	1,100	0	0	0	1,100	0	1,100
			95	1	1,577	0	0	0	1,577	0	1,577
			98o	1	511	0	0	0	511	0	511
			98n	No reports							
			99o	2	869	0	0	0	869	0	869
			99n	No reports							
			00o	No reports							
			00n	No reports							
2212-67-1	*	Molinate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	695	502	0	0	1,197	6,363	7,560
			98o	3	1,063	113	0	0	1,176	8,305	9,481
			98n	No reports							
			99o	4	1,698	116	0	0	1,814	7,997	9,811
			99n	1	2	0	0	0	2	60	62
			00o	4	1,585	105	0	0	1,690	3,243	4,933
			00n	No reports							
1313-27-5		Molybdenum trioxide	88	102	111,195	139,021	197,115	97,238	544,569	573,624	1,118,193
			95	163	179,060	27,305	333,730	77,604	617,699	1,029,058	1,646,757
			98o	171	198,560	36,018	302,000	48,888	585,466	621,914	1,207,380
			98n	20	22,062	312	5	899,506	921,885	148,188	1,070,073
			99o	173	100,444	36,086	117,120	111,465	365,115	1,214,524	1,579,639
			99n	20	14,654	758	0	561,238	576,650	179,240	755,890
			00o	175	71,218	26,676	148,950	193,796	440,640	1,371,213	1,811,853
			00n	23	20,913	300	0	670,920	692,133	129,781	821,914
76-15-3		Monochloropenta-fluoroethane (CFC-115)	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	14	275,259	2,854	3	0	278,116	7	278,123
			98o	7	76,256	5	0	0	76,261	0	76,261
			98n	1	6,852	0	0	0	6,852	0	6,852
			99o	5	65,485	5	0	0	65,490	0	65,490
			99n	1	11,129	0	0	0	11,129	0	11,129
			00o	4	59,749	5	0	0	59,754	0	59,754
			00n	1	1,700	0	0	0	1,700	0	1,700
150-68-5	*	Monuron	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
505-60-2	**	Mustard gas	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

	Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
**	Michler's ketone	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	436	0	0	1,577	2,013	0
		98o	0	0	0	305	14,098	0	511	14,914	0
		98n	No reports								
		99o	0	0	290,000	309	11,720	86	632	302,747	0
		99n	No reports								
		00o	No reports								
		00n	No reports								
*	Molinate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	3,312	128,004	6,450	137,766	0
		98o	0	0	0	0	9,646	67,166	10,483	87,295	0
		98n	No reports								
		99o	0	0	0	0	4,732	16,348	7,211	28,291	2,504
		99n	0	0	0	0	11,125	0	62	11,187	0
		00o	0	0	0	0	4,226	77,036	5,508	86,770	2,504
		00n	No reports								
	Molybdenum trioxide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	6,201,074	2,454,463	0	3,530	51,382	346,576	1,614,949	10,671,974	21,636
		98o	3,589,437	3,008,934	0	0	132,214	526,540	1,725,436	8,982,561	110
		98n	0	0	0	0	42,786	0	1,557,562	1,600,348	0
		99o	3,286,213	1,812,178	511	46,400	36,387	329,180	1,726,749	7,237,618	1,890
		99n	0	0	0	0	63,467	0	791,749	855,216	0
		00o	1,720,245	2,326,707	0	21,023	49,313	178,196	1,895,686	6,191,170	90,313
		00n	0	0	0	0	10,471	0	841,273	851,744	0
	Monochloropenta-fluoroethane (CFC-115)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	8,600	2,200	0	0	257,501	24,651	278,151	571,103	0
		98o	2,000	36,230	0	0	3,137	258	76,257	117,882	0
		98n	0	0	0	0	0	0	5,340	5,340	1,512
		99o	0	34,344	0	0	4,683	0	28,190	67,217	37,300
		99n	0	0	0	0	0	0	11,129	11,129	0
		00o	8,013	2,348	0	0	4,129	0	59,754	74,244	0
		00n	0	0	0	0	0	0	1,700	1,700	0
*	Monuron	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
**	Mustard gas	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
88671-89-0	*	Myclobutanil	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	0	0	0	0	0	0	0
			98o	3	1,000	0	0	0	1,000	0	1,000
			98n	No reports							
			99o	5	1,000	0	0	0	1,000	0	1,000
			99n	No reports							
			00o	6	1,000	0	0	0	1,000	0	1,000
			00n	No reports							
142-59-6	*	Nabam	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	0	0	0	0	0	0	0
			98o	5	0	4,864	0	0	4,864	0	4,864
			98n	1	0	0	0	0	0	0	0
			99o	4	0	0	0	0	0	0	0
			99n	No reports							
			00o	5	0	0	0	0	0	0	0
			00n	No reports							
300-76-5	*	Naled	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	50	0	0	0	50	2,200	2,250
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	2	0	0	0	0	0	0	0
			99n	No reports							
			00o	2	0	0	0	0	0	0	0
			00n	No reports							
91-20-3	*	Naphthalene	88	420	5,165,426	22,518	50,946	123,697	5,362,587	1,359,184	6,721,771
			95	543	2,721,074	43,352	44,318	44,782	2,853,526	475,981	3,329,507
			98o	543	3,376,268	34,180	191,677	1,262,478	4,864,603	824,191	5,688,794
			98n	224	91,912	296	5	11,028	103,241	122,188	225,429
			99o	550	2,602,181	38,374	166,054	51,279	2,857,888	641,636	3,499,524
			99n	202	101,356	580	5	93,832	195,773	104,810	300,583
			00o	560	2,151,069	48,568	205,684	131,156	2,536,477	279,648	2,816,125
			00n	184	173,418	287	250	594	174,549	31,439	205,988
134-32-7	**	alpha-Naphthyl-amine	88	3	590	101	0	0	691	0	691
			95	1	0	0	0	0	0	0	0
			98o	2	0	0	0	0	0	0	0
			98n	1	0	0	0	0	0	0	0
			99o	2	0	0	0	0	0	0	0
			99n	3	7	1	0	0	8	164	172
			00o	1	0	0	0	0	0	0	0
			00n	3	0	0	0	0	0	0	0
91-59-8	**	beta-Naphthyl-amine	88	No reports							
			95	No reports							
			98o	No reports							
			98n	1	0	0	0	0	0	0	0
			99o	No reports							
			99n	1	2	1	0	0	3	5	8
			00o	No reports							
			00n	2	0	0	0	0	0	0	0

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

	Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*	Myclobutanil	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	0	0	0
		98o	0	0	0	0	0	794	243	1,037	0
		98n	No reports								
		99o	0	0	0	0	0	2,116	455	2,571	0
		99n	No reports								
		00o	0	0	0	0	0	2,602	86	2,688	0
		00n	No reports								
*	Nabam	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	14,218	253	0	14,471	0
		98o	0	0	192	0	7,352	0	4,864	12,408	0
		98n	0	0	0	0	0	0	0	0	0
		99o	0	0	0	0	0	0	0	0	0
		99n	No reports								
		00o	0	0	0	0	0	0	0	0	0
		00n	No reports								
*	Naled	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	1,000	2,600	0	3,600	9
		98o	0	0	0	0	0	0	0	0	0
		98n	No reports								
		99o	0	0	0	0	0	0	0	0	0
		99n	No reports								
		00o	0	0	0	0	0	0	0	0	0
		00n	No reports								
*	Naphthalene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	10,707,785	805,729	5,310,396	1,883,846	8,482,851	1,239,743	3,090,782	31,521,132	351,872
		98o	8,251,370	989,387	6,787,628	1,682,299	8,048,896	1,028,079	4,799,997	31,587,656	81,403
		98n	1,181,526	33,469	5,104	22,735,868	846,984	94,138	108,996	25,006,085	57,332
		99o	14,439,008	1,043,508	71,193,194	2,372,662	6,395,518	699,765	3,529,484	99,673,139	31,390
		99n	432,197	62,372	4,485	856,986	2,647,239	130,326	205,060	4,338,665	11,733
		00o	12,853,272	6,573,131	8,371,876	2,139,325	10,818,538	368,247	2,874,251	43,998,640	5,049
		00n	365,943	49,605	3,192	493,001	4,169,112	86,232	190,078	5,357,163	10,316
**	alpha-Naphthylamine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	0	0	0
		98o	0	0	0	0	0	0	0	0	0
		98n	0	0	0	0	0	0	0	0	0
		99o	0	0	0	0	0	0	0	0	0
		99n	0	0	0	0	243,339	0	165	243,504	0
		00o	0	0	0	0	0	0	0	0	0
		00n	0	0	0	0	105,073	780	0	105,853	0
**	beta-Naphthylamine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	0	0	0	0	0	0	0	0	0
		99o	No reports								
		99n	0	0	0	0	118,000	0	3	118,003	0
		00o	No reports								
		00n	0	0	0	0	16,926	733	0	17,659	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
7440-02-0	**	Nickel	88	1,185	452,420	90,636	14,295	1,225,001	1,782,352	7,661,144	9,443,496
			95	2,012	326,525	25,996	6,370	394,078	752,969	3,950,393	4,703,362
			98o	2,241	707,564	27,561	19,654	353,096	1,107,875	3,183,335	4,291,210
			98n	60	42,295	4,286	110,158	4,939,158	5,095,897	3,970,420	9,066,317
			99o	2,251	742,657	25,562	16,689	363,020	1,147,928	3,551,480	4,699,408
			99n	47	40,011	1,496	250	4,062,464	4,104,221	3,748,263	7,852,484
			00o	2,258	635,694	23,912	16,566	412,792	1,088,964	4,622,069	5,711,032
			00n	41	15,225	2,015	0	1,619,696	1,636,936	1,983,327	3,620,263
--	**	Nickel compounds	88	581	274,177	132,233	224,968	2,384,594	3,015,972	6,210,238	9,226,210
			95	924	271,335	61,456	146,886	2,479,050	2,958,727	6,291,682	9,250,409
			98o	1,065	384,745	132,149	146,481	5,715,669	6,379,044	4,898,874	11,277,918
			98n	322	729,847	292,411	337,213	50,952,168	52,311,639	5,996,025	58,307,664
			99o	1,084	456,959	83,814	209,998	2,707,692	3,458,463	5,228,074	8,686,537
			99n	313	720,433	160,443	181,012	53,230,558	54,292,446	5,616,944	59,909,390
			00o	1,026	363,899	80,339	141,197	3,905,252	4,490,686	5,971,062	10,461,748
			00n	326	681,758	152,149	594,255	51,867,370	53,295,532	5,760,789	59,056,321
--		Nicotine and salts	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	22	365,639	755	0	135	366,529	288,712	655,241
			98o	31	325,882	706	0	0	326,588	287,471	614,059
			98n	2	3	0	0	0	3	250	253
			99o	34	286,683	586	0	0	287,269	758,433	1,045,702
			99n	3	19	0	0	0	19	889	908
			00o	37	306,148	840	0	0	306,988	214,953	521,941
			00n	3	4	0	0	0	4	163	167
1929-82-4	*	Nitrapyrin	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	7	119,451	0	0	119,458	0	119,458
			98o	3	1	0	0	0	1	0	1
			98n	No reports							
			99o	5	1	0	0	0	1	0	1
			99n	No reports							
			00o	6	1	0	0	0	1	0	1
			00n	No reports							
--		Nitrate compounds	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1,333	425,144	165,664,206	48,046,406	8,532,995	222,668,751	6,066,263	228,735,014
			98o	1,582	370,204	214,139,831	47,188,846	6,466,740	268,165,621	10,276,304	278,441,925
			98n	103	5,994	2,550,416	5,936,287	5,759,253	14,251,950	696,740	14,948,690
			99o	1,765	400,338	232,513,036	42,177,781	7,179,292	282,270,447	11,935,009	294,205,456
			99n	95	751	1,525,127	4,565,634	6,292,361	12,383,873	543,895	12,927,768
			00o	1,825	336,149	231,650,081	47,101,811	6,905,003	285,993,044	12,657,179	298,650,223
			00n	104	582	1,310,238	10,101,883	6,136,060	17,548,763	920,755	18,469,518
7697-37-2	*	Nitric acid	88	1,921	8,277,993	1,380,565	25,485,680	580,695	35,724,933	7,929,318	43,654,251
			95	1,850	2,627,173	46,586	18,755,717	293,009	21,722,485	4,395,862	26,118,347
			98o	1,852	2,376,889	47,646	18,869,510	159,272	21,453,317	936,235	22,389,552
			98n	148	369,555	13,005	5,300,750	63,544	5,746,854	211,377	5,958,231
			99o	1,806	2,195,402	60,181	16,482,141	222,825	18,960,549	7,864,005	26,824,554
			99n	143	594,485	0	6,328,468	60,018	6,982,971	207,213	7,190,184
			00o	1,780	2,294,904	51,764	11,877,808	309,623	14,534,099	8,287,088	22,821,187
			00n	148	6,886	10	7,613,956	138,476	7,759,328	110,909	7,870,237

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR *not reportable (chemicals added to the TRI list after 1988)*
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard *(see Appendix C for more information)*

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
** Nickel	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	38,876,004	82,242,054	127	767	1,536,785	955,778	3,481,144	127,092,659	19,071
	98o	38,422,524	81,763,546	38,720	1,899	319,324	556,472	3,482,308	124,584,794	10,591
	98n	18,430	122,923	0	0	20,200	3,187	10,127,021	10,291,761	0
	99o	28,691,411	82,612,427	0	575	849,079	556,938	3,919,998	116,630,428	172,606
	99n	16,954	169,110	0	0	72,021	4,325	8,215,222	8,477,632	0
	00o	40,609,146	81,586,762	106,100	24,816	1,653,289	410,532	5,168,416	129,559,060	14,307
	00n	14,722	56,562	0	0	57,529	165,705	4,509,328	4,803,846	0
** Nickel compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	13,170,540	34,902,775	0	2,120	5,609,537	1,156,876	7,828,173	62,670,021	332,627
	98o	5,915,209	28,024,688	5,035	357	674,087	786,836	11,764,272	47,170,484	710,320
	98n	238,108	1,012,633	0	0	197,447	86,774	58,341,978	59,876,940	4,709
	99o	5,421,557	29,917,844	2,900	27,271	647,131	799,670	8,920,204	45,736,577	416,119
	99n	982,507	1,271,558	0	0	35,156	99,979	54,649,391	57,038,591	5,230,025
	00o	5,879,050	27,305,743	7,493	3,406	682,975	883,243	9,542,682	44,304,593	1,235,325
	00n	912,601	1,743,134	0	0	67,524	145,366	56,930,039	59,798,664	2,203,011
Nicotine and salts	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	34,602	0	0	275,790	297,376	652,796	1,260,564	0
	98o	0	7,611	0	0	827,884	645,409	621,865	2,102,769	8,449
	98n	0	0	0	0	148,971	0	54	149,025	0
	99o	2,877	4,692	0	0	797,497	541,900	547,463	1,894,429	0
	99n	0	0	0	0	613,391	0	717	614,108	0
	00o	2,662	39,198	0	3,000	805,846	549,964	520,111	1,920,781	0
	00n	0	0	0	0	564,406	0	167	564,573	0
* Nitrapyrin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	7,100	0	380	128,628	136,108	0
	98o	0	0	0	0	0	140	1	141	0
	98n	No reports								
	99o	0	0	0	0	0	140	1	141	0
	99n	No reports								
	00o	0	0	0	0	0	534	1	535	0
	00n	No reports								
Nitrate compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	95,092,956	2,843,170	0	0	52,361,007	108,202,520	249,819,927	508,319,580	112,206
	98o	113,743,906	2,196,413	0	59,241	104,013,103	139,253,451	293,116,219	652,382,333	135,942
	98n	4,083,825	8,473	0	0	3,170,478	1,019,036	16,239,222	24,521,034	865
	99o	95,509,647	1,858,280	0	55,902	118,156,409	139,496,886	320,358,149	675,435,273	562,710
	99n	3,074,592	17,342	0	0	3,844,369	1,467,961	13,354,735	21,758,999	1,267
	00o	92,854,600	1,648,294	0	39,820	148,499,253	147,521,446	332,099,089	722,662,502	540,424
	00n	4,450,631	8,888	0	0	5,784,241	1,508,193	19,969,268	31,721,221	1,875
* Nitric acid	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	28,683,640	3,881,357	250,245	255	246,547,570	17,511,531	27,087,369	323,961,967	118,978
	98o	49,798,305	3,136,717	0	148	311,060,637	17,609,663	22,218,293	403,823,763	27,495
	98n	0	365	0	13,530	9,396,283	388,854	6,301,805	16,100,837	0
	99o	49,505,705	2,808,384	14,434	0	333,827,325	15,125,403	27,157,617	428,438,868	4,544
	99n	0	0	0	0	10,580,858	538,110	7,181,493	18,300,461	2
	00o	58,106,020	1,801,441	0	148	414,222,695	13,861,767	24,926,310	512,918,381	147,229
	00n	0	2,400	0	176	11,065,731	1,505,904	7,891,496	20,465,707	64

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
139-13-9	**	Nitrilotriacetic acid	88	14	2,500	5,100	0	5,100	12,700	250	12,950
			95	7	1	34	2,900	0	2,935	0	2,935
			98o	14	1,407	10,202	2,400	0	14,009	0	14,009
			98n	1	0	0	0	11,617	11,617	0	11,617
			99o	12	600	6,320	1,600	0	8,520	0	8,520
			99n	No reports							
			00o	11	651	8	2,200	0	2,859	0	2,859
			00n	No reports							
100-01-6		p-Nitroaniline	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	4	11,205	2	0	0	11,207	0	11,207
			98o	4	12,053	0	0	0	12,053	0	12,053
			98n	1	5	0	0	0	5	500	505
			99o	4	11,950	0	0	0	11,950	0	11,950
			99n	1	27	0	0	7,644	7,671	4,119	11,790
			00o	6	3,933	0	0	0	3,933	0	3,933
			00n	No reports							
99-59-2		5-Nitro-o-anisidine	88	No reports							
			95	1	10	0	0	0	10	0	10
			98o	1	10	5	0	0	15	0	15
			98n	No reports							
			99o	1	10	5	0	0	15	0	15
			99n	No reports							
			00o	1	10	5	0	0	15	0	15
			00n	No reports							
98-95-3	*,**	Nitrobenzene	88	19	41,279	7,283	819,000	3,538	871,100	69,570	940,670
			95	17	25,529	874	330,344	43	356,790	961	357,751
			98o	17	79,943	902	407,090	62	487,997	11,324	499,321
			98n	10	504	250	15,529	0	16,283	1,059	17,342
			99o	21	76,723	372	160,441	65	237,601	83,408	321,009
			99n	13	551	0	50,906	0	51,457	13,877	65,334
			00o	19	41,606	120	297,084	18	338,828	6,604	345,432
			00n	11	33	0	0	0	33	107	140
92-93-3	*,**	4-Nitrobiphenyl	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
1836-75-5	*,**	Nitrofen	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	1	505	0	0	0	505	5,500	6,005
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
** Nitrilotriacetic acid	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	2,500	0	0	0	969,141	1,872	2,935	976,448	0
	98o	0	0	0	0	1,070,287	27,440	14,009	1,111,736	0
	98n	0	0	0	0	0	0	11,617	11,617	0
	99o	0	0	0	0	727,119	142	8,520	735,781	0
	99n	No reports								
	00o	0	0	0	0	577,244	3,138	2,859	583,241	0
	00n	No reports								
p-Nitroaniline	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	7	0	266	93,016	12,007	105,296	0
	98o	0	0	0	0	0	169,426	12,253	181,679	0
	98n	0	0	0	0	28,500	1	150	28,651	0
	99o	0	0	0	0	0	86,550	12,200	98,750	0
	99n	0	0	0	0	1,249	0	11,790	13,039	0
	00o	9,570	0	32,495	85	0	9,411	3,933	55,494	0
	00n	No reports								
5-Nitro-o-anisidine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	5	5	0
	98o	0	0	0	0	0	0	1	1	0
	98n	No reports								
	99o	0	0	0	0	0	0	1	1	0
	99n	No reports								
	00o	0	0	0	0	0	0	1	1	0
	00n	No reports								
*,** Nitrobenzene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	1,277,200	0	1,554,583	79,781	1,297,305	639,061	354,552	5,202,482	647
	98o	419,863	0	1,847,505	590,234	1,743,632	1,056,242	497,174	6,154,650	7,023
	98n	0	0	0	663,888	778,054	0	16,670	1,458,612	0
	99o	13,245,570	1	1,773,033	1,431,993	3,005,001	2,334,493	327,531	22,117,622	9,088
	99n	150,901	0	0	250,049	1,240,915	732	51,127	1,693,724	10
	00o	796,670	0	2,727,633	823,483	1,055,499	1,539,055	337,937	7,280,277	763
	00n	0	0	178	43,065	526,187	13,405	138	582,973	0
*,** 4-Nitrobiphenyl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
*,** Nitrofen	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	0	200	0	0	0	0	0	200	0
	00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
51-75-2	**	Nitrogen mustard	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
55-63-0		Nitroglycerin	88	22	52,383	2,746	0	11,640	66,769	2	66,771
			95	20	26,087	13,300	0	0	39,387	0	39,387
			98o	21	12,814	4,713	0	0	17,527	266	17,793
			98n	1	0	0	0	0	0	0	0
			99o	28	15,507	1	0	0	15,508	1,014	16,522
			99n	4	3	0	0	0	3	111	114
			00o	27	154,372	1	0	0	154,373	2	154,375
			00n	2	0	0	0	0	0	0	0
88-75-5		2-Nitrophenol	88	4	33,689	1	0	2	33,692	13,100	46,792
			95	5	38	50	0	0	88	0	88
			98o	5	45	35	0	0	80	0	80
			98n	1	129	0	0	0	129	0	129
			99o	6	52	48	0	0	100	0	100
			99n	No reports							
			00o	5	84	56	0	0	140	0	140
			00n	1	0	0	0	0	0	0	0
100-02-7	*	4-Nitrophenol	88	7	7,855	0	6,300	7	14,162	70	14,232
			95	6	945	0	0	0	945	0	945
			98o	5	855	0	0	0	855	0	855
			98n	3	35	0	0	0	35	500	535
			99o	6	867	0	0	0	867	0	867
			99n	4	201	1	0	21,924	22,126	4,272	26,398
			00o	5	969	16	0	0	985	0	985
			00n	3	0	0	0	0	0	0	0
79-46-9	*,**	2-Nitropropane	88	15	389,385	4,300	257,000	0	650,685	4,785	655,470
			95	5	31,265	3,000	0	0	34,265	0	34,265
			98o	3	23,479	558	0	0	24,037	0	24,037
			98n	6	359	0	0	0	359	192	551
			99o	2	20,844	285	0	0	21,129	0	21,129
			99n	4	98	1	0	0	99	1,146	1,245
			00o	2	18,652	224	0	0	18,876	0	18,876
			00n	5	68	0	0	0	68	647	715
924-16-3	**	N-Nitrosodi-n-butylamine	88	No reports							
			95	No reports							
			98o	No reports							
			98n	1	0	0	0	0	0	0	0
			99o	No reports							
			99n	1	2	1	0	0	3	4	7
			00o	No reports							
			00n	2	0	0	0	0	0	0	0

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
**	Nitrogen mustard	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
	Nitroglycerin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	24,151	0	0	0	428,538	59,598	39,389	551,676	6
		98o	18,000	15,198	0	21,685	270,572	134,991	20,617	481,063	0
		98n	0	0	0	0	0	0	0	0	0
		99o	33,366	790	0	32,958	6,640,635	59,510	15,647	6,782,906	98
		99n	0	0	0	0	88,569	0	114	88,683	0
		00o	6,967	0	0	27,266	1,828,173	72,328	156,002	2,090,736	540
		00n	0	0	0	0	58,698	0	0	58,698	0
	2-Nitrophenol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	28,000	6	120,000	23,311	83	171,400	0
		98o	0	0	82,000	0	61,000	24,000	85	167,085	0
		98n	0	0	0	0	352,946	0	129	353,075	0
		99o	0	0	65,000	0	324,516	18,545	101	408,162	0
		99n	No reports								
		00o	0	0	120,000	0	670,000	18,034	142	808,176	0
		00n	0	0	0	0	0	0	0	0	0
*	4-Nitrophenol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	10,469	3	65,000	574,800	950	651,222	0
		98o	0	0	0	0	139,944	633,083	860	773,887	0
		98n	0	0	0	591,228	31,000	1	180	622,409	0
		99o	0	0	10,300	0	200,296	526,451	850	737,897	0
		99n	0	0	0	0	84,842	380	26,389	111,611	0
		00o	0	0	0	0	209,287	67,811	985	278,083	0
		00n	0	0	0	0	19,483	724	0	20,207	0
*,**	2-Nitropropane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	520	140,000	81	63,028	0	34,023	237,652	0
		98o	0	0	9,835	23	10,598	31,114	24,037	75,607	0
		98n	0	0	0	519,228	203,826	11,854	551	735,459	0
		99o	0	0	90	0	5,411	65	21,099	26,665	0
		99n	0	0	0	0	888,259	0	1,246	889,505	0
		00o	0	0	69	0	4,251	158	18,942	23,420	0
		00n	0	0	0	0	467,594	793	715	469,102	0
**	N-Nitrosodi-n-butylamine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	0	0	0	0	0	0	0	0	0
		99o	No reports								
		99n	0	0	0	0	32,000	0	2	32,002	0
		00o	No reports								
		00n	0	0	0	0	12,621	957	0	13,578	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
55-18-5	**	N-Nitrosodiethylamine	88	No reports							
			95	No reports							
			98o	No reports							
			98n	2	2	0	0	0	2	0	2
			99o	No reports							
			99n	3	30	1	0	7,640	7,671	4,123	11,794
			00o	No reports							
			00n	3	0	0	0	0	0	0	0
62-75-9	**	N-Nitrosodimethylamine	88	1	0	0	0	0	0	0	0
			95	No reports							
			98o	No reports							
			98n	1	129	0	0	0	129	0	129
			99o	1	5	0	0	0	5	0	5
			99n	No reports							
			00o	No reports							
			00n	1	0	0	0	0	0	0	0
86-30-6		N-Nitrosodiphenylamine	88	2	0	27	34,000	0	34,027	0	34,027
			95	3	10	0	0	0	10	0	10
			98o	4	12	0	0	0	12	0	12
			98n	1	63	0	0	0	63	0	63
			99o	5	16	0	0	0	16	0	16
			99n	1	17	0	0	0	17	0	17
			00o	4	20	0	0	0	20	0	20
			00n	2	29	0	0	0	29	0	29
156-10-5		p-Nitrosodiphenylamine	88	2	15	0	2,000	0	2,015	180	2,195
			95	2	24	0	0	0	24	520	544
			98o	2	24	0	0	0	24	0	24
			98n	No reports							
			99o	2	24	0	0	0	24	0	24
			99n	No reports							
			00o	2	0	0	0	0	0	0	0
			00n	No reports							
621-64-7	**	N-Nitrosodi-n-propylamine	88	No reports							
			95	No reports							
			98o	1	750	0	0	0	750	1,500	2,250
			98n	1	129	0	0	0	129	0	129
			99o	1	5	0	0	0	5	0	5
			99n	No reports							
			00o	1	2	0	0	0	2	0	2
			00n	2	0	0	0	0	0	0	0
759-73-9	**	N-Nitroso-N-ethylurea	88	No reports							
			95	No reports							
			98o	No reports							
			98n	1	0	0	0	0	0	0	0
			99o	No reports							
			99n	3	7	1	0	0	8	161	169
			00o	No reports							
			00n	3	0	0	0	0	0	0	0

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
** N-Nitrosodiethylamine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	0	0	0	0	23,708	0	2	23,710	0
	99o	No reports								
	99n	0	0	0	0	54,242	0	11,791	66,033	0
	00o	No reports								
	00n	0	0	0	0	33,492	798	0	34,290	0
** N-Nitrosodimethylamine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	0	0	0	0	352,946	0	129	353,075	0
	99o	0	0	0	0	3,978	40	1	4,019	0
	99n	No reports								
	00o	No reports								
	00n	0	0	0	0	0	0	0	0	0
N-Nitrosodiphenylamine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	30,815	340,005	10	370,830	0
	98o	0	0	0	340,000	77,702	34,298	12	452,012	0
	98n	0	0	0	0	80,769	0	63	80,832	0
	99o	0	0	0	410,000	66,647	35,279	11	511,937	0
	99n	0	0	0	0	348,042	0	17	348,059	0
	00o	0	0	45,500	490,000	31,000	20,662	18	587,180	0
	00n	0	0	0	0	348,039	0	29	348,068	0
p-Nitrosodiphenylamine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	8,600	15,000	0	65	544	24,209	0
	98o	0	0	9,300	16,500	0	0	24	25,824	0
	98n	No reports								
	99o	0	0	10,000	18,000	0	0	24	28,024	0
	99n	No reports								
	00o	0	0	9,100	16,200	0	0	0	25,300	0
	00n	No reports								
** N-Nitrosodi-n-propylamine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	0	0	25,000	1,500	25,000	0	600	52,100	0
	98n	0	0	0	0	352,946	0	129	353,075	0
	99o	0	0	0	0	3,605	36	1	3,642	0
	99n	No reports								
	00o	0	0	30,275	79	0	0	2	30,356	0
	00n	0	0	0	0	12,299	771	0	13,070	0
** N-Nitroso-N-ethylurea	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	0	0	0	0	0	0	0	0	0
	99o	No reports								
	99n	0	0	0	0	161,322	0	164	161,486	0
	00o	No reports								
	00n	0	0	0	0	98,336	781	0	99,117	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	On-site Releases: Surface Water Discharges Pounds	On-site Releases: Underground Injection Pounds	On-site Releases: Releases to Land Pounds	On-site Releases: Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
684-93-5	*,**	N-Nitroso-N-methylurea	88	No reports							
			95	No reports							
			98o	No reports							
			98n	1	0	0	0	0	0	0	0
			99o	No reports							
			99n	3	7	1	0	0	8	162	170
			00o	No reports							
			00n	3	0	0	0	0	0	0	0
4549-40-0	**	N-Nitrosomethylvinylamine	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	2	4	0	0	0	4	153	157
			00o	No reports							
			00n	1	0	0	0	0	0	0	0
59-89-2	**	N-Nitrosomorpholine	88	No reports							
			95	1	0	0	0	0	0	0	0
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
16543-55-8	**	N-Nitrosonornicotine	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
100-75-4	**	N-Nitrosopiperidine	88	No reports							
			95	No reports							
			98o	No reports							
			98n	1	0	0	0	0	0	0	0
			99o	No reports							
			99n	3	38	1	0	9,557	9,596	5,159	14,755
			00o	No reports							
			00n	3	0	0	5	0	5	0	5
99-55-8		5-Nitro-o-toluidine	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	5	0	0	0	5	30	35
			98o	2	0	0	0	0	0	0	0
			98n	1	0	0	0	0	0	0	0
			99o	2	0	0	0	0	0	0	0
			99n	3	27	0	0	7,644	7,671	4,139	11,810
			00o	3	0	0	0	0	0	0	0
			00n	2	0	0	0	0	0	0	0

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*,** N-Nitroso-N-methylurea	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	0	0	0	0	0	0	0	0	0
	99o	No reports								
	99n	0	0	0	0	162,480	0	165	162,645	0
	00o	No reports								
	00n	0	0	0	0	101,077	780	0	101,857	0
** N-Nitrosomethyl-vinylamine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	0	0	0	0	94,353	0	157	94,510	0
	00o	No reports								
	00n	0	0	0	0	67,878	0	0	67,878	0
** N-Nitrosomorpholine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
** N-Nitrosonornicotine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
** N-Nitrosopiperidine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	0	0	0	0	0	0	0	0	0
	99o	No reports								
	99n	0	0	0	0	73,025	0	14,753	87,778	0
	00o	No reports								
	00n	0	0	0	0	22,898	751	2	23,651	0
5-Nitro-o-toluidine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	35	35	0
	98o	0	0	0	0	0	0	0	0	0
	98n	0	0	0	0	0	0	0	0	0
	99o	0	0	0	0	0	0	0	0	0
	99n	0	0	0	0	71,394	0	11,808	83,202	0
	00o	0	0	0	0	0	0	0	0	0
	00n	0	0	0	733	12,510	66	0	13,309	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
27314-13-2	*	Norflurazon	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	5	0	0	0	5	54,000	54,005
			98o	4	15	76	0	229	320	14,850	15,170
			98n	No reports							
			99o	2	5	2	0	4	11	1,850	1,861
			99n	No reports							
			00o	3	0	0	0	0	0	14,462	14,462
			00n	No reports							
2234-13-1		Octachloro-naphthalene	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
29082-74-4	***	Octachlorostyrene	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	NR	NR	NR	NR	NR	NR	NR	NR
			98o	NR	NR	NR	NR	NR	NR	NR	NR
			98n	NR	NR	NR	NR	NR	NR	NR	NR
			99o	NR	NR	NR	NR	NR	NR	NR	NR
			99n	NR	NR	NR	NR	NR	NR	NR	NR
			00o	4	0.00	0.00	0.00	148.30	148.30	436.90	585.20
			00n	No reports							
19044-88-3	*	Oryzalin	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	5	0	0	0	5	0	5
			98o	3	98	0	0	0	98	0	98
			98n	1	5	0	0	0	5	0	5
			99o	4	48	0	0	0	48	0	48
			99n	1	5	0	0	0	5	0	5
			00o	4	24	0	0	0	24	0	24
			00n	No reports							
20816-12-0		Osmium tetroxide	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	1	0	0	0	0	0	0	0
			00o	No reports							
			00n	1	0	5	0	0	5	0	5
301-12-2	*	Oxydemeton methyl	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** PBT chemical added to list for 2000 reporting year See Chapter 3 for more information

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Norflurazon	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	1,000	54,010	55,010	0
	98o	0	0	0	0	12,700	59,780	340	72,820	0
	98n	No reports								
	99o	0	0	0	0	0	46,850	15	46,865	0
	99n	No reports								
	00o	0	0	0	0	0	14,900	14,900	29,800	0
	00n	No reports								
Octachloro-naphthalene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
*** Octachlorostyrene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	NR	NR	NR	NR	NR	NR	NR	NR	NR
	98o	NR	NR	NR	NR	NR	NR	NR	NR	NR
	98n	NR	NR	NR	NR	NR	NR	NR	NR	NR
	99o	NR	NR	NR	NR	NR	NR	NR	NR	NR
	99n	NR	NR	NR	NR	NR	NR	NR	NR	NR
	00o	0.00	0.00	0.00	0.00	19.00	0.00	585.20	604.20	0.00
	00n	No reports								
* Oryzalin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	40,000	2	40,002	0
	98o	0	0	0	0	3,500	42,000	93	45,593	0
	98n	0	0	0	0	19,472	0	5	19,477	0
	99o	0	0	0	0	46	67,000	48	67,094	0
	99n	0	0	0	0	19,472	0	0	19,472	0
	00o	0	0	0	11,000	0	33	24	11,057	0
	00n	No reports								
Osmium tetroxide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	0	0	0	0	37,606	0	0	37,606	0
	00o	No reports								
	00n	0	0	0	0	47,912	0	9	47,921	0
* Oxydemeton methyl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	0	0	0	0	0	0	0	0	0
	99n	No reports								
	00o	0	0	0	0	0	0	0	0	0
	00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** PBT chemical added to list for 2000 reporting year See Chapter 3 for more information

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number	Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
19666-30-9 *	Oxydiazon	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	3	665	0	0	0	665	0	665
		98o	5	1,160	0	0	0	1,160	750	1,910
		98n	No reports							
		99o	6	770	0	0	0	770	2,207	2,977
		99n	No reports							
		00o	5	900	0	0	0	900	1,502	2,402
		00n	No reports							
42874-03-3 *	Oxyfluorfen	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	2	87	3	0	0	90	0	90
		98o	2	10	0	0	0	10	0	10
		98n	No reports							
		99o	2	1,305	0	0	0	1,305	0	1,305
		99n	1	0	0	0	17,690	17,690	0	17,690
		00o	3	10	0	0	0	10	1,297	1,307
		00n	1	0	0	0	16,113	16,113	0	16,113
10028-15-6	Ozone	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	29	571,182	0	0	0	571,182	0	571,182
		98o	36	657,045	0	0	0	657,045	0	657,045
		98n	2	3	0	0	0	3	0	3
		99o	37	631,963	0	0	5	631,968	0	631,968
		99n	2	1	0	0	0	1	0	1
		00o	41	840,789	0	0	0	840,789	0	840,789
		00n	3	500	0	0	0	500	0	500
123-63-7	Paraldehyde	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	2	33	0	0	0	33	0	33
		98o	3	26	0	0	0	26	0	26
		98n	1	0	0	0	0	0	0	0
		99o	3	31	71	0	0	102	0	102
		99n	3	23	1	0	0	24	268	292
		00o	2	33	0	0	0	33	0	33
		00n	4	5	5	0	0	10	0	10
1910-42-5 *	Paraquat dichloride	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	4	1,000	0	0	0	1,000	0	1,000
		98o	3	500	0	0	0	500	0	500
		98n	No reports							
		99o	3	0	0	0	0	0	0	0
		99n	No reports							
		00o	3	0	0	0	0	0	0	0
		00n	No reports							
56-38-2 *	Parathion	88	13	3,265	750	0	250	4,265	3,959	8,224
		95	2	0	0	0	0	0	0	0
		98o	1	0	0	0	0	0	0	0
		98n	1	0	0	0	0	0	85	85
		99o	1	0	0	0	0	0	0	0
		99n	2	0	0	0	0	0	28	28
		00o	1	0	0	0	0	0	0	0
		00n	2	0	0	0	0	0	0	0

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*	Oxydiazon	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	3,012	0	0	0	2,400	100	611	6,123	0
		98o	28,500	0	0	0	960	287	900	30,647	0
		98n	No reports								
		99o	31,000	0	0	0	1,000	4,092	4,641	40,733	0
		99n	No reports								
		00o	36,300	0	0	0	780	440	5,393	42,913	0
		00n	No reports								
*	Oxyfluorfen	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	130	15,093	90	15,313	0
		98o	0	0	0	0	2,800	2,900	1	5,701	0
		98n	No reports								
		99o	0	0	0	0	1,300	15,599	2	16,901	0
		99n	0	0	0	0	0	0	17,690	17,690	0
		00o	0	0	0	0	1,800	14,411	2	16,213	0
		00n	0	0	0	0	0	0	16,113	16,113	0
	Ozone	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	2,402,564	0	569,989	2,972,553	0
		98o	0	0	0	0	2,918,204	0	655,951	3,574,155	0
		98n	0	0	0	0	0	0	3	3	0
		99o	0	0	0	0	2,629,193	0	662,835	3,292,028	0
		99n	0	0	0	0	0	0	1	1	0
		00o	0	0	0	0	3,155,398	0	840,596	3,995,994	0
		00n	0	0	0	0	0	0	292	292	0
	Paraldehyde	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	47,460	11	250,000	0	33	297,504	0
		98o	0	0	18,414	7	140,002	0	26	158,449	0
		98n	0	0	0	0	0	0	0	0	0
		99o	0	0	43,482	0	110,445	8	102	154,037	0
		99n	0	0	0	0	299,520	0	289	299,809	0
		00o	0	0	26,172	5	190,000	0	33	216,210	0
		00n	0	0	0	0	178,343	858	5	179,206	0
*	Paraquat dichloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	68	0	0	0	0	170	206	444	0
		98o	0	0	0	0	0	6	112	118	0
		98n	No reports								
		99o	0	0	0	0	0	10	0	10	0
		99n	No reports								
		00o	0	0	0	0	0	10	0	10	0
		00n	No reports								
*	Parathion	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	0	0	0
		98o	0	0	0	0	0	0	0	0	0
		98n	0	0	0	0	32,638	0	85	32,723	0
		99o	0	0	0	0	0	0	0	0	0
		99n	0	0	0	0	69,806	0	28	69,834	0
		00o	0	0	0	0	0	0	0	0	0
		00n	0	0	0	0	64,761	36	0	64,797	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
1114-71-2	*	Pebulate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	507	122	0	0	629	811	1,440
			98o	2	520	98	0	0	618	1,501	2,119
			98n	No reports							
			99o	1	500	0	0	0	500	500	1,000
			99n	No reports							
			00o	1	500	0	0	0	500	500	1,000
			00n	No reports							
40487-42-1	*	Pendimethalin	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	5	1,250	250	0	500	2 000	0	2,000
			98o	6	3,000	15	0	5	3,020	560	3,580
			98n	3	3	0	0	0	3	123	126
			99o	9	2,465	40	0	5	2,510	5,651	8,161
			99n	2	3	0	0	0	3	111	114
		Not comparable	00o	15	731 54	329 00	0 00	20,675 00	21,735 54	9,467 00	31,202.54
		to prior years***	00n	3	2 00	0 00	0 00	0 00	2 00	88 00	90 00
608-93-5	****	Pentachloro-benzene	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	NR	NR	NR	NR	NR	NR	NR	NR
			98o	NR	NR	NR	NR	NR	NR	NR	NR
			98n	NR	NR	NR	NR	NR	NR	NR	NR
			99o	NR	NR	NR	NR	NR	NR	NR	NR
			99n	NR	NR	NR	NR	NR	NR	NR	NR
			00o	12	91.64	173.85	11.90	2,010.80	2,288.19	348.00	2,636.19
			00n	8	70.90	0.00	0.00	612.00	682.90	7.00	689.90
76-01-7	*	Pentachloroethane	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	4	1,534	22	0	0	1,556	0	1,556
			98o	7	1,550	0	0	0	1,550	0	1,550
			98n	3	60	0	0	0	60	0	60
			99o	7	785	1	0	0	786	2	788
			99n	3	23	1	0	0	24	242	266
			00o	8	1,334	0	0	0	1,334	2	1,336
			00n	3	13	0	0	0	13	0	13
87-86-5	*,**	Pentachlorophenol	88	55	14,029	2,465	20,000	3,717	40,211	518,105	558,316
			95	37	6,256	2,896	0	250	9,402	23,942	33,344
			98o	35	4,343	1,057	0	250	5,650	23,118	28,768
			98n	9	287	250	250	240,000	240,787	1,940	242,727
			99o	34	1,279	1,276	0	250	2,805	1,918	4,723
			99n	14	27	1	5	98,587	98,620	463	99,083
			00o	35	443	1,206	0	25	1,674	1,561	3,235
			00n	9	13	0	250	0	263	401	664
57-33-0		Pentobarbital	88	NR	NR	NR	NR	NR	NR	NR	NR
		sodium	95	No reports							
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries

NR not reportable (chemicals added to the TRI list after 1988)

DC definition change (chemicals whose reporting definition has changed since 1988)

No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

**** PBT chemical added to list for 2000 reporting year See Chapter 3 for more information

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Pebulate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	600	4,600	270	5,470	0
	98o	0	0	0	0	89	2,809	1,523	4,421	0
	98n	No reports								
	99o	0	0	0	0	0	0	680	680	0
	99n	No reports								
	00o	0	0	0	0	0	0	600	600	0
	00n	No reports								
* Pendimethalin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	300	0	0	0	190,000	6,774	1,498	198,572	56
	98o	2,000	0	0	0	160,000	104,946	2,532	269,478	0
	98n	0	0	0	0	86,483	0	126	86,609	0
	99o	6,000	0	0	0	150,000	64,385	4,555	224,940	0
	99n	0	0	0	0	32,171	0	115	32,286	0
Not comparable	00o	4,000 00	0 00	0 00	0.00	630,000.00	19,602.00	31,266 55	684,868 55	0 00
to prior years***	00n	0.00	0.00	0 00	0.00	26,145 00	0.00	92.00	26,237 00	0.00
****Pentachlorobenzene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	NR	NR	NR	NR	NR	NR	NR	NR	NR
	98o	NR	NR	NR	NR	NR	NR	NR	NR	NR
	98n	NR	NR	NR	NR	NR	NR	NR	NR	NR
	99o	NR	NR	NR	NR	NR	NR	NR	NR	NR
	99n	NR	NR	NR	NR	NR	NR	NR	NR	NR
	00o	40.00	401.00	0.00	0.00	239,210.00	630.81	2,634.38	242,916.19	2.35
	00n	0.00	0.00	0.00	0.00	103,057.00	760.00	691.90	104,508.90	0.00
* Pentachloroethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	220,000	0	5,972,374	75,431	1,552	6,269,357	0
	98o	620,000	0	0	0	5,007,683	107,405	1,551	5,736,639	0
	98n	0	0	0	134,821	47,064	0	60	181,945	0
	99o	670,000	16,407	0	0	5,699,574	43,357	627	6,429,965	168
	99n	0	0	0	0	149,751	0	353	150,104	0
	00o	340,000	5,796	617,910	0	15,204,049	61,082	1,823	16,230,660	0
	00n	0	0	0	0	99,691	887	13	100,591	0
*,**Pentachlorophenol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	1,888,603	334	9,151	14,606	6,780	87,462	25,551	2,032,487	7
	98o	76,838	227,808	1,680	4,416	4,790	127,928	25,948	469,408	5,813
	98n	0	0	1,002	0	105,151	5	242,089	348,247	0
	99o	19,440	4,773	39,000	2,907	7,766	154,328	16,156	244,370	1,760
	99n	0	0	2,837	21	321,684	674	97,586	422,802	2,000
	00o	10,766	0	64,416	4,078	419	67,597	2,701	149,977	6,285
	00n	0	13,933	2,456	0	201,817	1,698	301	220,205	0
Pentobarbital	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
sodium	95	No reports								
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries

NR not reportable (chemicals added to the TRI list after 1988)

DC definition change (chemicals whose reporting definition has changed since 1988)

No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

**** PBT chemical added to list for 2000 reporting year See Chapter 3 for more information

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
79-21-0	*	Peracetic acid	88	8	5,453	55	0	0	5,508	0	5,508
			95	24	7,847	15	0	1,144	9,006	0	9,006
			98o	27	8,330	5	0	1,150	9,485	0	9,485
			98n	No reports							
			99o	28	13,557	755	0	1,095	15,407	0	15,407
			99n	No reports							
			00o	30	8,422	5	0	2,795	11,222	0	11,222
			00n	1	0	0	0	0	0	0	0
594-42-3	*	Perchloromethyl mercaptan	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	541	0	0	0	541	0	541
			98o	3	894	0	0	0	894	0	894
			98n	No reports							
			99o	3	899	0	0	0	899	0	899
			99n	No reports							
			00o	3	820	0	0	0	820	0	820
			00n	No reports							
52645-53-1	*	Permethrin	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	13	1,299	37	0	250	1,586	751	2,337
			98o	18	4,435	7	0	0	4,442	17,549	21,991
			98n	1	0	0	0	0	0	0	0
			99o	19	2,593	0	0	0	2,593	1,004	3,597
			99n	3	0	0	0	31,000	31,000	9	31,009
			00o	20	1,581	7	0	0	1,588	1,000	2,588
			00n	1	0	0	0	0	0	0	0
85-01-8		Phenanthrene	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	36	72,633	19	0	4,008	76,660	74,560	151,220
			98o	68	238,895	214	0	77,577	316,686	80,258	396,944
			98n	10	26,006	0	0	0	26,006	606	26,612
			99o	77	253,888	172	0	15,800	269,860	107,667	377,527
			99n	11	3,577	0	0	59,013	62,590	10,682	73,272
			00o	85	107,515	876	0	715	109,106	28,414	137,520
			00n	10	8	0	0	15,198	15,206	500	15,706
108-95-2	*	Phenol	88	635	10,712,736	259,230	4,661,319	1,882,485	17,515,770	2,536,030	20,051,800
			95	761	9,369,394	70,986	3,823,235	174,581	13,438,196	1,327,795	14,765,991
			98o	786	8,997,533	60,749	1,648,446	436,654	11,143,382	1,250,769	12,394,151
			98n	32	1,627	1,277	432,901	67,000	502,805	6,204	509,009
			99o	765	7,723,438	45,772	1,575,395	1,419,139	10,763,744	1,304,542	12,068,286
			99n	30	12,721	6	267,782	19,590	300,099	7,891	307,990
			00o	751	6,289,621	42,426	2,045,999	142,653	8,520,699	1,008,925	9,529,624
			00n	31	2,070	6,044	423,355	73,607	505,076	37,335	542,411
26002-80-2	*	Phenothrin	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	2	0	0	0	0	0	0	0
			98n	No reports							
			99o	3	0	0	0	0	0	0	0
			99n	No reports							
			00o	3	10	0	0	0	10	0	10
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*	Peracetic acid	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	13,833	0	0	0	12,884	12,396	8,889	48,002	0
		98o	0	0	0	0	47,536	17,732	9,971	75,239	0
		98n	No reports								
		99o	0	0	0	0	20,329	5,860	27,481	53,670	0
		99n	No reports								
		00o	0	0	0	0	94,229	20,424	26,235	140,888	0
		00n	0	0	0	0	0	0	0	0	0
*	Perchloromethyl mercaptan	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	540	0	541	1,081	0
		98o	0	0	0	0	120,000	15	891	120,906	0
		98n	No reports								
		99o	0	0	0	0	112,000	8	898	112,906	0
		99n	No reports								
		00o	0	0	0	0	156,000	6	820	156,826	0
		00n	No reports								
*	Permethrin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	5	651	665	543	1,864	0
		98o	0	0	0	0	277	22,529	5,379	28,185	0
		98n	0	0	0	0	10,538	0	0	10,538	0
		99o	0	0	0	0	215	17,999	4,383	22,597	0
		99n	0	0	0	0	26,033	0	31,235	57,268	0
		00o	0	0	0	0	3,373	22,664	1,672	27,709	0
		00n	0	0	0	0	10,774	273	0	11,047	0
	Phenanthrene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	162,334	1,190	35,001	197,478	1,123,105	2,410	153,880	1,675,398	42,526
		98o	658,266	98,267	53,336	165,155	526,904	170,536	341,494	2,013,958	7,312
		98n	0	0	0	32,000	234,397	0	27,212	293,609	0
		99o	1,082,986	83,544	340,620	216,420	43,339	112,080	391,635	2,270,624	9
		99n	0	0	0	33,800	347,738	0	73,753	455,291	1
		00o	924,954	534,836	101,300	130,031	676,678	142,140	134,132	2,644,071	10
		00n	0	0	0	10,500	295,222	0	16,008	321,730	0
*	Phenol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	41,534,425	556,968	28,742,254	3,686,272	34,989,078	6,364,238	14,554,619	130,427,854	72,165
		98o	42,421,572	133,242	32,544,546	4,372,598	26,228,029	5,249,883	11,988,355	122,938,225	49,180
		98n	0	0	0	4,914,898	4,715,602	1,557	571,501	10,203,558	8
		99o	41,856,467	593,038	30,395,466	3,667,756	28,164,654	6,289,074	10,797,995	121,764,450	7,029
		99n	6,895	0	627	405,878	2,281,090	8,770	306,352	3,009,612	9
		00o	58,342,789	1,025,878	23,115,084	7,509,854	28,795,968	6,172,241	9,634,808	134,596,622	1,848
		00n	7,073	0	4,455	560,407	1,818,001	142,673	550,983	3,083,592	12
*	Phenothrin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	0	0	0
		98o	0	0	0	0	0	0	0	0	0
		98n	No reports								
		99o	0	0	0	0	0	0	0	0	0
		99n	No reports								
		00o	0	0	0	0	0	5,031	20	5,051	0
		00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number	Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
95-54-5	1,2-Phenylene-diamine	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	8	977	41,100	0	2,176	44,253	31	44,284
		98o	7	528	51	0	0	579	1,631	2,210
		98n	1	37	0	0	0	37	10	47
		99o	7	518	30	0	4,033	4,581	7	4,588
		99n	No reports							
		00o	8	517	118	0	3,497	4,132	0	4,132
		00n	1	31	0	0	0	31	0	31
108-45-2	1,3-Phenylene-diamine	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	20	6,621	43,343	0	63,153	113,117	80	113,197
		98o	23	8,878	722	0	18,668	28,268	20,549	48,817
		98n	2	37	0	0	0	37	10	47
		99o	20	2,358	237	0	31,534	34,129	37	34,166
		99n	1	0	0	0	0	0	0	0
		00o	21	3,062	179	0	38,980	42,221	2,138	44,359
		00n	1	31	0	0	0	31	0	31
106-50-3	p-Phenylene-diamine	88	13	113,890	826	4,716	0	119,432	64,452	183,884
		95	10	4,440	856	0	653	5,949	0	5,949
		98o	12	1,517	114	0	0	1,631	1,816	3,447
		98n	No reports							
		99o	11	1,781	184	0	1,100	3,065	2,978	6,043
		99n	No reports							
		00o	10	9,020	93	10	954	10,077	2,566	12,643
		00n	1	31	0	0	0	31	0	31
615-28-1	1,2-Phenylene-diamine dihydrochloride	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	No reports							
		98o	No reports							
		98n	No reports							
		99o	No reports							
		99n	No reports							
		00o	No reports							
		00n	No reports							
624-18-0	1,4-Phenylene-diamine dihydrochloride	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	No reports							
		98o	No reports							
		98n	No reports							
		99o	No reports							
		99n	No reports							
		00o	No reports							
		00n	No reports							
90-43-7 *	2-Phenylphenol	88	15	10,630	480	0	0	11,110	250	11,360
		95	17	27,063	10	0	5	27,078	5,656	32,734
		98o	14	23	20	0	250	293	1,363	1,656
		98n	1	0	0	0	0	0	0	0
		99o	19	14	10	0	253	277	1,755	2,032
		99n	1	0	0	0	0	0	0	0
		00o	18	260	10	0	0	270	1,552	1,822
		00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
1,2-Phenylene-diamine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	504,896	7,316	44,052	556,264	320
	98o	0	0	0	0	176,437	50,690	2,208	229,335	0
	98n	0	0	0	0	0	0	37	37	0
	99o	0	0	0	0	178,620	47,156	4,588	230,364	0
	99n	No reports								
	00o	0	0	0	0	121,018	48,077	4,132	173,227	0
	00n	0	0	0	0	134,813	0	31	134,844	0
1,3-Phenylene-diamine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	493	676,332	134,187	112,936	923,948	0
	98o	650	114,558	0	2,300	674,437	1,734,329	46,389	2,572,663	1,520
	98n	0	0	0	0	12,604	0	37	12,641	0
	99o	760	0	0	2,901	256,562	1,730,750	35,231	2,026,204	0
	99n	0	0	0	0	19,738	0	0	19,738	0
	00o	290	0	0	3,052	201,990	1,285,245	40,208	1,530,785	0
	00n	0	0	0	0	134,819	0	31	134,850	0
p-Phenylenediamine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	364,868	20,082	5,757	390,707	0
	98o	0	0	0	111	337,520	66,661	3,045	407,337	0
	98n	No reports								
	99o	0	0	0	8	413,800	104,497	4,093	522,398	0
	99n	No reports								
	00o	0	0	0	93	260,417	30,873	11,268	302,651	0
	00n	0	0	0	0	134,811	0	31	134,842	0
1,2-Phenylene-diamine dihydrochloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
1,4-Phenylene-diamine dihydrochloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
* 2-Phenylphenol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	530	0	1,027,544	2,104	32,551	1,062,729	0
	98o	197	0	300	0	120,000	332	456	121,285	0
	98n	0	0	0	0	0	0	0	0	0
	99o	0	0	1	0	125,000	2,970	313	128,284	0
	99n	0	0	0	0	0	0	0	0	0
	00o	0	0	1	0	6,300	2,574	922	9,797	0
	00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
57-41-0	**	Phenytoin	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	19,300	19,300
			98o	1	1	0	0	0	1	7,510	7,511
			98n	1	3	0	0	0	3	143	146
			99o	1	1	0	0	0	1	9,400	9,401
			99n	No reports							
			00o	1	255	0	0	0	255	12,600	12,855
			00n	No reports							
75-44-5		Phosgene	88	37	21,603	500	250	0	22,353	480	22,833
			95	29	15,894	0	5	0	15,899	0	15,899
			98o	34	20,247	0	0	3	20,250	0	20,250
			98n	No reports							
			99o	31	16,673	0	0	0	16,673	0	16,673
			99n	2	3	0	0	0	3	93	96
			00o	28	15,950	0	0	0	15,950	0	15,950
			00n	1	0	250	0	0	250	0	250
7803-51-2	*	Phosphine	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	1,491	0	0	0	1,491	0	1,491
			98o	5	38,368	0	0	0	38,368	0	38,368
			98n	No reports							
			99o	5	54,385	0	0	0	54,385	0	54,385
			99n	2	3	0	0	0	3	92	95
			00o	5	85,227	0	0	0	85,227	0	85,227
			00n	1	0	0	0	0	0	0	0
7723-14-0	*	Phosphorus (yellow or white)	88	73	20,608	11,322	0	3,893,674	3,925,604	195,013	4,120,617
			95	53	28,621	3,661	0	1,871,801	1,904,083	23,650	1,927,733
			98o	51	23,590	3,761	0	2,273,118	2,300,469	7,637	2,308,106
			98n	3	14	0	0	0	14	568	582
			99o	54	9,998	4,995	0	2,715,672	2,730,665	6,739	2,737,404
			99n	3	75,125	0	0	0	75,125	108	75,233
			00o	48	2,919	3,584	0	979,571	986,074	11,912	997,986
			00n	1	0	0	0	0	0	0	0
85-44-9		Phthalic anhydride	88	180	549,909	1,040	0	1,265	552,214	3,976,682	4,528,896
			95	184	604,993	711	0	674	606,378	76,916	683,294
			98o	163	303,603	193	0	0	303,796	3,827,768	4,131,564
			98n	6	21	0	31,039	0	31,060	386	31,446
			99o	153	276,527	67	0	300	276,894	2,954,964	3,231,858
			99n	7	538	1	0	7,640	8,179	6,099	14,278
			00o	157	244,046	250	0	6,032	250,328	3,321,300	3,571,628
			00n	9	18	0	5	75,477	75,500	462	75,962
1918-02-1	*	Picloram	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	220	1	0	0	221	0	221
			98o	2	460	380,006	0	0	380,466	0	380,466
			98n	No reports							
			99o	2	2,800	133,010	0	0	135,810	0	135,810
			99n	No reports							
			00o	2	2,388	150,500	0	9,000	161,888	0	161,888
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
**	Phenytoin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	19,000	19,000	0
		98o	0	0	0	0	140	15,000	7,500	22,640	0
		98n	0	0	0	0	20,629	0	146	20,775	0
		99o	0	0	0	0	152	17,500	9,400	27,052	0
		99n	No reports								
		00o	0	0	0	0	130	4,300	12,600	17,030	0
		00n	No reports								
	Phosgene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	430,034	0	15,138,316	2,414	15,867	15,586,631	7
		98o	3,173,304	0	0	330	7,417,424	735	20,288	10,612,081	43
		98n	No reports								
		99o	10,150,418	0	0	0	11,339,630	543	16,440	21,507,031	33
		99n	0	0	0	0	112,537	0	95	112,632	0
		00o	6,180,000	0	0	0	12,439,482	4,580	17,332	18,641,394	31
		00n	0	0	0	0	86,407	0	24	86,431	0
*	Phosphine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	2,491	2,491	10
		98o	0	0	0	0	328,000	0	38,368	366,368	135
		98n	No reports								
		99o	0	0	0	0	385,101	0	54,385	439,486	0
		99n	0	0	0	0	54,236	0	95	54,331	0
		00o	0	0	0	0	309,815	0	85,217	395,032	0
		00n	0	0	0	0	37,392	0	0	37,392	0
*	Phosphorus (yellow or white)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	1,091	26,089	0	0	5,052	147,342	1,929,173	2,108,747	1,077
		98o	1	236,289	0	0	900,878	1,235	2,306,947	3,445,350	4,400
		98n	0	0	0	0	80,274	0	576	80,850	0
		99o	1	202,852	0	0	583,780	2,671	2,737,121	3,526,425	1
		99n	75,121	0	0	0	19,836	0	112	95,069	0
		00o	0	92,946	0	0	1,221,607	1,090	992,232	2,307,875	0
		00n	0	0	0	0	0	0	0	0	0
	Phthalic anhydride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	421,574	1,317	2,420,922	4,951,573	18,689,501	446,526	670,336	27,601,749	26,158
		98o	169,533	49,603	3,110,037	2,975,259	16,603,832	560,162	4,128,871	27,597,297	15,046
		98n	0	0	0	13,502	177,000	0	31,446	221,948	0
		99o	79,831	29,939	2,993,912	1,871,113	15,571,615	153,837	3,202,510	23,902,757	72,439
		99n	0	0	0	33,034	322,550	492	12,199	368,275	5
		00o	141,428	85,316	2,881,336	1,227,541	13,234,639	589,157	2,887,606	21,047,023	3,090
		00n	0	0	172	734	279,428	1,070	75,884	357,288	0
*	Picloram	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	23,208	0	221	23,429	0
		98o	0	0	0	0	59,000	0	380,006	439,006	0
		98n	No reports								
		99o	0	0	0	0	51,940	280,000	136,010	467,950	0
		99n	No reports								
		00o	0	0	0	0	48,470	340,000	160,508	548,978	0
		00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
88-89-1		Picric acid	88	5	252	251	1,362,180	250	1,362,933	0	1,362,933
			95	9	221	0	49,256	0	49,477	0	49,477
			98o	8	0	1	96,222	0	96,223	0	96,223
			98n	No reports							
			99o	8	0	1	129,398	0	129,399	0	129,399
			99n	No reports							
			00o	9	0	274	106,784	0	107,058	0	107,058
			00n	No reports							
51-03-6	*	Piperonyl butoxide	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	12	775	0	0	0	775	750	1,525
			98o	12	501	0	0	0	501	0	501
			98n	No reports							
			99o	12	1,005	0	0	0	1,005	0	1,005
			99n	1	0	0	0	0	0	0	0
			00o	12	1,001	144	0	0	1,145	0	1,145
			00n	1	0	0	0	0	0	0	0
29232-93-7	*	Pirimiphos methyl	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	1	1	0	0	0	1	0	1
			99n	No reports							
			00o	1	5	0	0	0	5	0	5
			00n	No reports							
--	**	Polybrominated biphenyls	88	1	250	0	0	0	250	0	250
			95	2	0	0	0	0	0	0	0
			98o	2	0	0	0	0	0	0	0
			98n	No reports							
			99o	2	0	0	0	0	0	0	0
			99n	No reports							
			00o	No reports							
			00n	No reports							
--	**	Polychlorinated alkanes	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	72	23,250	6,211	0	5	29,466	197,607	227,073
			98o	69	4,085	4,131	0	0	8,216	109,932	118,148
			98n	2	0	0	0	0	0	0	0
			99o	66	5,788	4,805	0	0	10,593	110,943	121,536
			99n	3	0	0	0	16,065	16,065	8,713	24,778
			00o	60	6,489	5,706	0	0	12,195	94,105	106,300
			00n	5	350	0	0	0	350	16,794	17,144
1336-36-3	*,**	Polychlorinated biphenyls (PCBs)	88	120	6	10	0	752	768	410,996	411,764
			95	9	0	0	0	0	0	34,432	34,432
			98o	7	0	0	0	134,160	134,160	135	134,295
			98n	14	446	251	5	3,607,976	3,608,678	4,192	3,612,870
			99o	8	0	0	0	0	0	108	108
			99n	15	531	2	0	10,164,476	10,165,009	1,533	10,166,542
		Not comparable	00o	123	4,837 79	26.25	0 00	22,851 40	27,715 44	22,662 02	50,377 46
		to prior years***	00n	48	1,016 37	2 57	0 60	1,406,035.80	1,407,055.34	3,484.05	1,410,539.38

Note On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
Picric acid	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	53,393	2	1,261,618	0	49,477	1,364,490	0
	98o	0	0	129,412	12,941	1,627,444	0	96,223	1,866,020	0
	98n	No reports								
	99o	0	0	582	0	1,582,234	0	129,399	1,712,215	0
	99n	No reports								
	00o	0	0	13,597	3	2,132,561	0	107,058	2,253,219	0
	00n	No reports								
* Piperonyl butoxide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	5	0	16,290	1,099	17,394	0
	98o	0	0	0	0	0	3,412	426	3,838	0
	98n	No reports								
	99o	0	0	0	0	0	3,432	595	4,027	0
	99n	0	0	0	0	21,382	0	0	21,382	0
	00o	0	0	0	0	0	11,802	712	12,514	0
	00n	0	0	0	0	21,362	0	0	21,362	0
* Pirimiphos methyl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	0	0	0	0	0	0	1	1	0
	99n	No reports								
	00o	0	0	0	0	0	0	1	1	0
	00n	No reports								
** Polybrominated biphenyls	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	2,720	0	0	0	0	0	2,720	0
	98o	0	1,000	0	0	0	0	0	1,000	0
	98n	No reports								
	99o	0	448	0	0	0	0	0	448	0
	99n	No reports								
	00o	No reports								
	00n	No reports								
** Polychlorinated alkanes	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	229,803	208,674	0	137,632	335,520	574,977	242,026	1,728,632	0
	98o	110,100	469,915	32,400	89,093	36,201	232,498	145,365	1,115,572	628
	98n	0	0	0	0	11,325	846	0	12,171	0
	99o	127,200	425,913	28,000	94,229	340	227,335	137,900	1,040,917	0
	99n	0	0	0	0	29,848	0	24,823	54,671	0
	00o	120,000	278,554	0	77,643	2,288	242,816	104,572	825,873	0
	00n	0	0	0	1,466	46,140	151	17,144	64,901	0
*,** Polychlorinated biphenyls (PCBs)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	64,494	8,242	72,736	0
	98o	0	0	0	0	0	261,979	0	261,979	1
	98n	0	140,018	0	0	8,446,718	428,113	3,626,637	12,641,486	0
	99o	0	0	0	0	0	644,531	0	644,531	111
	99n	0	92,003	0	0	11,690,585	388,219	6,629,574	18,800,381	0
Not comparable	00o	358.00	242 20	1,359 00	37 00	21,463.41	81,375 89	48,618 91	153,454.41	22,122 41
to prior years***	00n	0.00	510 45	51 77	10,480 00	1,884,547.00	207,409.92	1,432,595 88	13,535,595.02	0.11

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
--	**	Polycyclic aromatic compounds	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	162	453,141	4,995	0	39,556	497,692	1,226,135	1,723,827
			98o	191	1,436,140	1,987	0	169,011	1,607,138	1,548,853	3,155,991
			98n	79	1,377	21	0	115,530	116,928	3,206	120,134
			99o	201	1,319,036	1,720	0	16,958	1,337,714	2,072,386	3,410,100
			99n	85	41,139	43	0	186,055	227,237	6,931	234,168
		Not comparable to prior years***	00o	1,377	1,850,087.02	7,185.29	10,000.00	46,625.58	1,913,897.89	2,859,628.61	4,773,526.50
			00n	807	24,031.32	10,420.54	0.00	263,949.84	298,401.70	165,058.20	463,459.91
7758-01-2	**	Potassium bromate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	5	0	0	0	5	0	5
			98o	4	10	0	0	0	10	0	10
			98n	No reports							
			99o	2	5	0	0	0	5	0	5
			99n	No reports							
			00o	3	505	0	0	0	505	750	1,255
			00n	No reports							
128-03-0	*	Potassium dimethyldithio-carbamate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	11	224	10,170	0	0	10,394	0	10,394
			98o	19	533	43,088	0	5	43,626	5	43,631
			98n	No reports							
			99o	20	10,523	25,567	0	5	36,095	676	36,771
			99n	No reports							
			00o	14	16,792	10,394	0	0	27,186	0	27,186
			00n	No reports							
137-41-7	*	Potassium N-methyldithio-carbamate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	35	0	0	0	35	0	35
			98o	5	0	0	0	0	0	0	0
			98n	No reports							
			99o	5	10	5,680	0	0	5,690	0	5,690
			99n	No reports							
			00o	4	5	5	0	0	10	23,377	23,387
			00n	No reports							
41198-08-7	*	Profenofos	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	1	10	0	0	0	10	0	10
			98n	No reports							
			99o	1	10	0	0	0	10	0	10
			99n	No reports							
			00o	No reports							
			00n	No reports							
7287-19-6	*	Prometryn	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	6	1,481	159	0	0	1,640	890	2,530
			98o	5	725	8	0	0	733	1,047	1,780
			98n	No reports							
			99o	5	502	4	0	0	506	0	506
			99n	No reports							
			00o	4	533	0	0	0	533	0	533
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information) For polycyclic aromatic compounds, applies to all polycyclic aromatic compounds reported except benzo(a)phenanthrene, dibenzo(a,e)fluoranthene, benzo(j,k)fluorene, and 3-methylcholanthrene

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
** Polycyclic aromatic compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	1,473,048	116,094	10,499,200	59,666	2,502,982	13,833	1,753,630	16,418,453	22,295
	98o	1,991,915	246,834	3,835,404	270,675	4,698,159	39,251	3,251,727	14,333,965	43,939
	98n	312	216	0	0	107,002	1,345	120,939	229,814	106
	99o	3,457,863	218,251	4,126,035	101,828	3,952,104	63,574	3,546,516	15,466,171	131,627
	99n	59	2,099	0	10	640,656	2,522	233,319	878,665	331
Not comparable to prior years***	00o	2,832,036.62	472,196.61	5,764,250.07	198,424.32	15,102,015.80	252,280.11	5,166,367.90	29,787,571.44	36,506.66
	00n	717.27	140,720.70	1,540.48	8,062.34	9,046,998.08	2,319.32	410,607.80	9,610,965.98	27,570.87
** Potassium bromate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	0	0	51,447	1	0	0	13	51,461	0
	98n	No reports								
	99o	0	0	0	0	0	0	10	10	0
	99n	No reports								
	00o	0	0	0	0	0	0	1,060	1,060	0
	00n	No reports								
* Potassium dimethyldithio-carbamate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	19,317	161,362	10,394	191,073	0
	98o	0	0	0	0	23,596	120,325	54,888	198,809	0
	98n	No reports								
	99o	0	0	0	0	42,919	72,363	52,819	168,101	0
	99n	No reports								
	00o	0	0	0	0	8,504	57,251	27,186	92,941	0
	00n	No reports								
* Potassium N-methyldithio-carbamate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	35	35	0
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	0	0	0	0	4,647	0	5,690	10,337	0
	99n	No reports								
	00o	0	0	0	0	0	0	30,000	30,000	0
	00n	No reports								
* Profenofos	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	109	0	0	109	0
	98o	0	0	0	0	0	0	7,270	7,270	0
	98n	No reports								
	99o	0	0	0	0	0	0	6,420	6,420	0
	99n	No reports								
	00o	No reports								
	00n	No reports								
* Prometryn	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	1	1,314	7,603	4,028	12,946	0
	98o	0	0	0	0	30,035	38,455	789	69,279	0
	98n	No reports								
	99o	0	0	0	0	51,018	6,238	4,342	61,598	0
	99n	No reports								
	00o	0	0	0	0	10,007	21,250	21,776	53,033	0
	00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information) For polycyclic aromatic compounds, applies to all polycyclic aromatic compounds reported except benzo(a)phenanthrene, dibenzo(a,e)fluoranthene, benzo(j,k)fluorene, and 3-methylcholanthrene

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
23950-58-5	*	Pronamide	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	255	0	0	0	255	0	255
			98o	2	255	0	0	0	255	0	255
			98n	2	110	0	0	0	110	0	110
			99o	2	330	0	0	0	330	0	330
			99n	1	2	1	0	0	3	16	19
			00o	2	170	0	0	0	170	0	170
			00n	2	0	0	0	0	0	0	0
1918-16-7	*	Propachlor	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	4	331	0	0	0	331	777	1,108
			98o	4	62	0	0	0	62	600	662
			98n	No reports							
			99o	2	60	0	0	0	60	0	60
			99n	2	21	0	0	14,208	14,229	10	14,239
			00o	2	0	0	0	0	0	120	120
			00n	1	3	0	0	0	3	0	3
1120-71-4	**	Propane sultone	88	2	0	0	0	0	0	0	0
			95	1	0	0	0	0	0	0	0
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	2	5	0	5	0	10	157	167
			00o	No reports							
			00n	2	1	0	0	0	1	0	1
709-98-8	*	Propanil	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	4	2,357	250	0	0	2,607	3,723	6,330
			98o	5	2,505	750	0	0	3,255	11,250	14,505
			98n	1	2	0	0	0	2	270	272
			99o	5	2,010	750	0	0	2,760	26,250	29,010
			99n	No reports							
			00o	4	520	250	0	0	770	28,500	29,270
			00n	1	1	0	0	0	1	0	1
2312-35-8	*	Propargite	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	426	0	0	0	426	0	426
			98o	3	525	0	0	0	525	3,546	4,071
			98n	No reports							
			99o	3	739	0	0	0	739	9,446	10,185
			99n	No reports							
			00o	3	551	0	0	0	551	1,140	1,691
			00n	No reports							
107-19-7	*	Propargyl alcohol	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	11	10,245	0	290,680	0	300,925	936	301,861
			98o	14	15,675	0	418,223	7,620	441,518	253	441,771
			98n	2	5	0	0	0	5	0	5
			99o	12	9,960	0	545,399	0	555,359	10,085	565,444
			99n	3	14	0	0	0	14	152	166
			00o	10	3,803	0	1,031,538	0	1,035,341	26,096	1,061,437
			00n	1	0	0	0	0	0	0	0

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Pronamide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	3,700	0	0	0	0	1,200	260	5,160	0
	98o	5,500	0	0	0	0	2,095	290	7,885	0
	98n	0	0	0	234,265	0	0	110	234,375	0
	99o	14,000	0	0	0	0	2,393	1,613	18,006	0
	99n	0	0	0	0	33,000	0	15	33,015	0
	00o	11,000	0	0	0	0	1,297	1,047	13,344	0
	00n	0	0	0	0	15,014	789	0	15,803	0
* Propachlor	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	7,270	1,237	8,507	14,000
	98o	0	0	0	0	0	91,800	662	92,462	0
	98n	No reports								
	99o	0	0	0	0	0	85,700	660	86,360	0
	99n	0	0	0	0	77,027	0	14,224	91,251	0
	00o	0	0	0	0	95	900	120	1,115	0
	00n	0	0	0	0	13,652	0	3	13,655	0
** Propane sultone	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	16	0	0	16	0
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	0	0	0	0	129,321	0	165	129,486	0
	00o	No reports								
	00n	0	0	0	0	103,051	772	1	103,824	0
* Propanil	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	402	4,468	4,870	0
	98o	200,000	0	0	0	0	86,745	12,552	299,297	50
	98n	0	0	0	0	202,192	0	272	202,464	0
	99o	0	0	0	0	0	270,452	3,357	273,809	50
	99n	No reports								
	00o	0	0	0	0	0	400,424	1,695	402,119	110
	00n	0	0	0	0	33,794	4	1	33,799	0
* Propargite	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	544	0	4,365	426	5,335	0
	98o	0	0	0	2,216	0	76,189	3,896	82,301	0
	98n	No reports								
	99o	0	0	0	4,164	255	13,305	564	18,288	0
	99n	No reports								
	00o	0	0	0	3,240	255	10,397	376	14,268	0
	00n	No reports								
* Propargyl alcohol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	198,867	344,704	56,027	78,003	301,422	979,023	0
	98o	0	0	60,400	520,327	109,142	41,800	444,545	1,176,214	1
	98n	0	0	0	909	13,178	1,000	2	15,089	0
	99o	0	0	13,091	4	94,786	62,376	591,893	762,150	5
	99n	0	0	0	0	137,838	0	159	137,997	0
	00o	32	0	0	0	110	44,757	1,101,028	1,145,927	0
	00n	0	0	0	0	67,879	0	0	67,879	0

Note. Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
31218-83-4	*	Propetamphos	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	500	0	0	0	500	750	1,250
			98o	1	10	0	0	0	10	250	260
			98n	No reports							
			99o	1	10	0	0	0	10	250	260
			99n	No reports							
			00o	1	10	0	0	0	10	750	760
			00n	No reports							
60207-90-1	*	Propiconazole	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	0	0	0	0	0	0	0
			98o	5	10	0	0	0	10	0	10
			98n	No reports							
			99o	3	10	0	0	0	10	0	10
			99n	No reports							
			00o	3	0	0	0	0	0	0	0
			00n	No reports							
57-57-8	*,**	beta-Propiolactone	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
123-38-6	*	Propionaldehyde	88	15	1,267,839	1,156	930	0	1,269,925	0	1,269,925
			95	24	263,349	27,012	101,432	0	391,793	0	391,793
			98o	26	311,153	6,017	92,183	78	409,431	14	409,445
			98n	3	192	0	0	0	192	0	192
			99o	24	426,111	2,604	97,144	0	525,859	331	526,190
			99n	3	11	0	15,576	0	15,587	0	15,587
			00o	30	304,516	10,878	91,235	2,277	408,906	283	409,189
			00n	5	17	0	0	0	17	167	184
114-26-1	*	Propoxur	88	5	250	0	0	0	250	250	500
			95	5	5	0	0	0	5	0	5
			98o	2	0	0	0	0	0	0	0
			98n	1	0	0	0	0	0	10	10
			99o	1	0	0	0	0	0	0	0
			99n	1	11	0	0	0	11	10	21
			00o	2	5	0	0	0	5	0	5
			00n	No reports							
115-07-1		Propylene	88	334	32,200,231	10,003	0	0	32,210,234	3,320	32,213,554
			95	355	27,556,169	4,047	0	169	27,560,385	298	27,560,683
			98o	372	16,428,265	3,104	2,870	389	16,434,628	897	16,435,525
			98n	41	79,765	0	0	0	79,765	0	79,765
			99o	386	13,581,888	1,023	136,393	396	13,719,700	118	13,719,818
			99n	48	65,839	0	0	0	65,839	0	65,839
			00o	390	12,976,081	3,246	27,664	375	13,007,366	18	13,007,384
			00n	42	43,813	0	0	0	43,813	0	43,813

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Propetamphos	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	1,067	1,067	0
	98o	0	0	0	0	0	0	482	482	0
	98n	No reports								
	99o	0	0	0	0	0	0	490	490	0
	99n	No reports								
	00o	0	0	0	0	0	0	495	495	0
	00n	No reports								
* Propiconazole	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	1,026	0	1,026	0
	98o	0	0	0	0	25,000	0	2,943	27,943	0
	98n	No reports								
	99o	0	0	0	0	22,000	0	2,001	24,001	0
	99n	No reports								
	00o	0	0	0	0	15,000	0	0	15,000	0
	00n	No reports								
*,** beta-Propiolactone	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
* Propionaldehyde	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	898,697	5,565	2,348,820	79,790	387,308	3,720,180	23
	98o	0	0	2,021,614	4,648	5,082,153	46,283	411,365	7,566,063	402
	98n	0	0	0	442,609	3	15	192	442,819	0
	99o	440,000	0	2,311,283	6,236	3,030,972	34,933	518,997	6,342,421	0
	99n	0	0	0	270	17	0	15,578	15,865	0
	00o	0	0	4,639,054	4,830	30,248,173	1,767	410,764	35,304,588	18
	00n	0	0	0	250	81,183	0	424	81,857	0
* Propoxur	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	1,081	4	1,085	0
	98o	0	0	0	0	0	435	0	435	0
	98n	0	0	0	0	0	0	25	25	0
	99o	0	0	0	0	0	0	0	0	0
	99n	0	0	0	0	56,411	0	11	56,422	0
	00o	0	0	0	0	0	39	1	40	0
	00n	No reports								
Propylene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	6,713,304	0	463,253,246	3,132,285	254,254,014	80,239	26,865,031	754,298,119	1,008,714
	98o	74,791,416	23,152	456,059,665	2,218	299,247,194	2,896,808	15,058,707	848,079,160	1,239,970
	98n	0	0	0	0	14,440	0	79,844	94,284	9
	99o	105,899,757	28	395,331,079	10,337,809	387,957,004	1,579,785	13,454,668	914,560,130	267,570
	99n	0	0	0	0	33,620	0	65,246	98,866	0
	00o	109,032,927	45	313,392,929	71	950,502,439	437,870	12,897,518	1,386,263,799	332,009
	00n	0	0	0	0	796,167	0	43,445	839,612	1

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
75-55-8	**	Propyleneimine	88	1	500	0	0	0	500	0	500
			95	7	600	0	0	0	600	0	600
			98o	4	385	5	0	0	390	5	395
			98n	No reports							
			99o	4	104	0	0	0	104	0	104
			99n	2	4	0	0	0	4	153	157
			00o	3	89	0	0	0	89	0	89
			00n	1	0	0	0	0	0	0	0
75-56-9	*,**	Propylene oxide	88	128	3,680,215	112,503	1,113,780	11,630	4,918,128	16,626	4,934,754
			95	137	839,153	29,934	22,577	4,403	896,067	10,633	906,700
			98o	115	740,027	1,124	1,923	691	743,765	5,687	749,452
			98n	7	32	0	13,380	0	13,412	0	13,412
			99o	119	705,048	10,847	4,580	715	721,190	5,266	726,456
			99n	8	4	0	10,491	28,649	39,144	0	39,144
			00o	114	444,921	11,652	2,100	741	459,414	6,824	466,238
			00n	6	0	0	0	114,491	114,491	0	114,491
110-86-1	*	Pyridine	88	31	251,799	2,158	491,775	1,125	746,857	40,699	787,556
			95	42	100,190	830	532,497	4	633,521	433	633,954
			98o	50	70,262	1,056	593,199	0	664,517	13,854	678,371
			98n	16	697	0	5	0	702	2,292	2,994
			99o	52	68,647	1,074	953,995	0	1,023,716	378	1,024,094
			99n	14	899	1	0	0	900	52,862	53,762
			00o	46	82,364	904	959,200	5	1,042,473	35,648	1,078,121
			00n	14	1,303	1,026	0	0	2,329	1,696	4,025
91-22-5		Quinoline	88	34	49,350	502	0	896	50,748	6,242	56,990
			95	23	11,412	20	13,000	405	24,837	3,744	28,581
			98o	21	15,415	32	29,350	265	45,062	2,553	47,615
			98n	1	1	0	0	0	1	73	74
			99o	19	11,813	26	25,205	7	37,051	21,715	58,766
			99n	No reports							
			00o	17	22,026	21	31,413	11	53,471	3,233	56,704
			00n	1	0	0	0	0	0	0	0
106-51-4	*	Quinone	88	5	11,300	140	0	0	11,440	0	11,440
			95	5	7,101	1,500	0	0	8,601	0	8,601
			98o	7	482	1,600	0	0	2,082	0	2,082
			98n	1	0	0	0	0	0	0	0
			99o	7	415	1,400	0	0	1,815	0	1,815
			99n	3	24	1	0	0	25	161	186
			00o	6	214	1,400	0	0	1,614	130	1,744
			00n	3	105	0	0	0	105	0	105
82-68-8	*	Quintozene	88	6	1,064	0	0	0	1,064	12,625	13,689
			95	10	1,424	0	0	800	2,224	192	2,416
			98o	11	1,788	0	0	0	1,788	2	1,790
			98n	2	10	0	0	0	10	0	10
			99o	14	408	0	0	0	408	5,007	5,415
			99n	3	14	1	0	0	15	15	30
			00o	14	1,907	0	0	0	1,907	8,180	10,087
			00n	5	21	0	0	0	21	250	271

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
** Propyleneimine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	1,433	0	600	2,033	0
	98o	0	0	0	0	2,788	6	680	3,474	0
	98n	No reports								
	99o	0	0	0	0	4,319	0	104	4,423	0
	99n	0	0	0	0	106,854	0	157	107,011	0
	00o	0	0	0	0	2,660	0	90	2,750	0
	00n	0	0	0	0	55,812	0	0	55,812	0
*,** Propylene oxide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	3,091	0	17,981,778	282,917	14,410,159	192,373	1,138,346	34,008,664	20,197
	98o	1,081,157	0	13,924,312	79,248	14,404,412	475,463	754,076	30,718,668	1,411
	98n	0	0	0	18,634	40,509	0	13,412	72,555	0
	99o	508,380	619	12,895,870	13,529	12,248,050	192,824	730,336	26,589,608	1,254
	99n	0	0	0	5,232	58,302	7,414	39,184	110,132	0
	00o	508,380	0	14,595,273	29,398	191,585,137	179,584	536,140	207,433,912	11,256
	00n	0	0	0	0	0	0	37,076	37,076	0
* Pyridine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	4,074,830	14,008	1,713,719	186,855	348,378	483,305	631,040	7,452,135	1,074
	98o	616,015	0	1,756,718	470,128	765,210	720,142	689,515	5,017,728	1,109
	98n	0	0	16,073	620,143	1,333,326	28,086	2,577	2,000,205	0
	99o	637,004	8,071	984,135	450,440	681,114	451,088	1,021,864	4,233,716	1,001
	99n	278,231	44	5,645	189,439	1,915,397	598,710	1,020	2,988,486	10
	00o	590,646	10,457	808,220	348,622	677,466	543,528	1,041,171	4,020,110	8
	00n	10	0	7,293	13,648	2,086,009	191,489	2,976	2,301,425	0
Quinoline	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	1,750	2,243	302,003	22	222,705	16,120	27,181	572,024	252
	98o	27,147	1,713	122,038	11,582	109,680	961	47,741	320,862	300
	98n	0	0	0	0	10,461	0	74	10,535	0
	99o	12,831	1,137	87,056	11,353	135,351	4,200	58,429	310,357	0
	99n	No reports								
	00o	8,046	0	28,000	3,649	149,410	18,962	56,296	264,363	0
	00n	0	0	0	0	0	0	0	0	0
* Quinone	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	179,870	1,328	130,500	30,173	8,601	350,472	0
	98o	0	0	1,400	17,747	567,300	10,917	2,101	599,465	0
	98n	0	0	0	0	0	0	0	0	0
	99o	0	0	340	162,544	116,001	135,984	1,805	416,674	0
	99n	0	0	0	0	176,005	0	182	176,187	0
	00o	0	0	340	124,080	95,141	164,935	1,734	386,230	0
	00n	0	0	0	0	108,980	771	105	109,856	0
* Quintozene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	863	0	0	0	0	759,587	2,251	762,701	110
	98o	515	0	0	342,800	0	13,168	1,790	358,273	0
	98n	0	0	0	0	44,515	0	3	44,518	0
	99o	2,371	0	0	214,728	0	8,126	451	225,676	30
	99n	0	0	0	0	126,058	0	21	126,079	0
	00o	2,299	0	0	296,406	0	6,361	10,333	315,399	0
	00n	0	0	0	262,247	56,876	774	51	319,948	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
76578-14-8	*	Quizalofop-ethyl	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	6	0	0	0	6	0	6
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							
10453-86-8	*	Resmethrin	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	0	0	0	0	0	0	0
			98o	2	0	0	0	0	0	0	0
			98n	No reports							
			99o	3	22	0	0	0	22	0	22
			99n	No reports							
			00o	3	0	0	0	0	0	0	0
			00n	No reports							
81-07-2		Saccharin (manufacturing)	88	4	750	0	0	0	750	750	1,500
			95	1	99	0	0	0	99	1,500	1,599
			98o	2	160	0	0	0	160	940	1,100
			98n	No reports							
			99o	2	63	0	0	0	63	940	1,003
			99n	1	0	0	0	0	0	0	0
			00o	2	80	0	0	0	80	100	180
			00n	No reports							
94-59-7	*,**	Safrole	88	2	500	0	0	0	500	0	500
			95	1	255	0	0	0	255	0	255
			98o	2	10	0	0	0	10	0	10
			98n	1	0	0	0	0	0	0	0
			99o	2	260	0	0	0	260	0	260
			99n	2	21	0	0	6,005	6,026	3,239	9,265
			00o	2	260	0	0	0	260	0	260
			00n	2	0	0	0	0	0	0	0
7782-49-2	*	Selenium	88	24	16,282	1,168	0	127,508	144,958	4,367	149,325
			95	15	1,450	92	0	23	1,565	3,501	5,066
			98o	15	34,028	58	0	2,010	36,096	15,798	51,894
			98n	11	807	0	17,937	254,259	273,003	185,901	458,904
			99o	16	69,012	285	0	3,113	72,410	11,509	83,919
			99n	9	790	0	0	264,804	265,594	531	266,125
			00o	16	61,551	1,019	0	2,540	65,110	3,675	68,785
			00n	9	3,930	0	40,246	154,981	199,157	71,753	270,910
--		Selenium compounds	88	18	14,506	250	3,400	45,750	63,906	63,226	127,132
			95	40	61,960	2,184	3,640	264,759	332,543	124,185	456,728
			98o	52	74,716	3,373	38,030	360,694	476,813	94,983	571,796
			98n	80	527,766	32,727	8	4,809,151	5,369,652	378,931	5,748,583
			99o	50	82,408	4,106	33,509	305,342	425,365	94,026	519,391
			99n	73	508,159	40,960	0	6,121,824	6,670,943	558,772	7,229,715
			00o	46	69,658	3,814	27,699	269,446	370,617	165,300	535,917
			00n	74	507,271	52,234	0	6,940,487	7,499,992	1,592,313	9,092,305

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Quizalofop-ethyl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	5	5	0
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	0	0	0	0	0	0	0	0	0
	99n	No reports								
	00o	0	0	0	0	0	0	0	0	0
	00n	No reports								
* Resmethrin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	0	0	0	0	0	46	0	46	0
	99n	No reports								
	00o	0	0	0	0	0	50	0	50	0
	00n	No reports								
Saccharin (manufacturing)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	9,700	10	1,600	11,310	74
	98o	0	0	0	0	7,300	7	1,100	8,407	0
	98n	No reports								
	99o	0	0	0	0	6,800	7	1,000	7,807	0
	99n	0	0	0	0	117,930	0	0	117,930	0
	00o	0	0	0	0	2,800	3	174	2,977	3
	00n	No reports								
*,** Safrole	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	1	5	0	6	0
	98o	0	0	0	0	0	10	30	40	0
	98n	0	0	0	0	0	0	0	0	0
	99o	0	0	0	0	0	10	110	120	0
	99n	0	0	0	0	61,981	0	9,263	71,244	0
	00o	0	0	0	0	0	5	125	130	0
	00n	0	0	0	0	12,805	799	0	13,604	0
* Selenium	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	1,604	4,604	0	0	23	2,271	1,524	10,026	0
	98o	0	0	86,174	3,902	156	920	45,019	136,171	0
	98n	0	0	0	0	0	185,504	273,341	458,845	0
	99o	4	800	0	0	1,166	50	81,686	83,706	47
	99n	0	0	0	0	0	0	265,869	265,869	0
	00o	4,254	10,065	0	0	498	1,103	64,286	80,206	106
	00n	0	9,170	0	0	0	71,633	199,157	279,960	0
Selenium compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	590,805	158,278	0	10	2	49,853	356,404	1,155,352	49,259
	98o	595,899	68,632	0	0	2,040	9,743	511,927	1,188,241	76,443
	98n	55,128	1,009	0	0	4	23	5,750,783	5,806,947	0
	99o	574,215	22,862	0	0	2,410	10,343	408,122	1,017,952	109,656
	99n	56,980	12,004	0	0	0	20	6,651,292	6,720,296	670,000
	00o	600,109	22,523	0	0	0	85,430	424,638	1,132,700	29,000
	00n	25,100	11,906	0	0	0	67	8,554,551	8,591,624	290,000

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
74051-80-2	*	Sethoxydim	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	2	10	0	0	0	10	0	10
			98n	1	0	0	0	0	0	0	0
			99o	2	10	0	0	0	10	0	10
			99n	No reports							
			00o	3	3	0	0	0	3	0	3
			00n	No reports							
7440-22-4	*	Silver	88	72	47,988	1,654	0	39,510	89,152	8,482	97,634
			95	77	9,552	166	0	255	9,973	17,676	27,649
			98o	86	11,702	171	2	2,026	13,901	69,054	82,955
			98n	14	60	0	15,380	400,306	415,746	35,826	451,572
			99o	84	11,186	96	0	2,660	13,942	80,544	94,486
			99n	12	894	0	17,000	220,096	237,990	257,058	495,048
			00o	77	9,723	105	0	2,260	12,088	7,338	19,426
			00n	9	352	0	19,000	47,759	67,111	3,950	71,061
--		Silver compounds	88	46	15,406	8,684	250	11,550	35,890	15,803	51,693
			95	61	15,828	6,289	380	35,325	57,822	7,590	65,412
			98o	64	6,891	5,709	109	76,755	89,464	194,930	284,394
			98n	21	847	676	140,000	4,091,354	4,232,877	162,750	4,395,627
			99o	69	8,960	7,223	222	64,399	80,804	32,491	113,295
			99n	16	1,309	322	160,000	3,519,852	3,681,483	40,061	3,721,544
			00o	62	9,142	6,439	214	75,555	91,350	30,309	121,659
			00n	17	2,302	289	170,000	3,990,728	4,163,319	297,546	4,460,865
122-34-9	*	Simazine	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	7	4,990	232	0	5	5,227	26,231	31,458
			98o	7	3,321	332	0	0	3,653	4,497	8,150
			98n	No reports							
			99o	6	3,928	385	0	0	4,313	2,385	6,698
			99n	No reports							
			00o	6	2,974	367	0	8	3,349	3,418	6,767
			00n	No reports							
26628-22-8	*	Sodium azide	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	14	35,575	200	0	255	36,030	133,837	169,867
			98o	11	15,392	20	0	250	15,662	10,891	26,553
			98n	3	14	0	0	190,646	190,660	180	190,840
			99o	9	5,946	15	0	0	5,961	5,652	11,613
			99n	3	11	0	0	33,542	33,553	318	33,871
			00o	8	3,880	17	0	3	3,900	5,783	9,683
			00n	6	17	0	0	34,717	34,734	374	35,108
1982-69-0	*	Sodium dicamba	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	14,350	0	750	0	15,100	0	15,100
			98o	2	8,560	0	750	0	9,310	0	9,310
			98n	No reports							
			99o	2	5,150	0	250	0	5,400	0	5,400
			99n	No reports							
			00o	5	7,102	0	250	0	7,352	500	7,852
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*	Sethoxydim	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	0	0	0	0	0	293	20	313	0
		98n	0	0	0	0	17,391	0	0	17,391	0
		99o	0	0	0	0	0	0	20	20	0
		99n	No reports								
		00o	0	0	0	0	0	965	3	968	0
		00n	No reports								
*	Silver	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	563,590	1,266,487	0	1	87,462	531	20,608	1,938,679	614
		98o	648,613	1,291,264	0	32	4,917	44,958	235,419	2,225,203	1
		98n	400	0	0	0	0	17	415,721	416,138	0
		99o	420,072	2,862,118	0	11	87	40,121	25,250	3,347,659	8
		99n	0	124,430	0	0	0	143,364	237,610	505,404	10
		00o	399,965	1,076,217	0	0	822	745	66,760	1,544,508	2
		00n	0	12,388	0	0	0	3,681	66,952	83,021	0
	Silver compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	344,726	1,078,082	0	0	3,966,504	24,661	56,741	5,470,714	269
		98o	264,091	1,065,831	0	0	52,854	13,062	444,776	1,840,614	5,414
		98n	2,539	1,951	0	0	0	2,396	4,395,711	4,402,597	0
		99o	3,876,240	1,200,040	0	0	2,090	12,992	287,611	5,378,973	9,970
		99n	612	2,031	0	0	0	651	3,187,191	3,190,485	540,000
		00o	1,509,170	787,839	0	0	2,708	35,951	247,658	2,583,326	21,810
		00n	280	1,201	0	0	0	0	4,092,865	4,094,346	240,000
*	Simazine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	150,000	24,000	4,970	178,970	0
		98o	50	0	0	0	68,000	1,500	6,294	75,844	0
		98n	No reports								
		99o	50	0	0	0	77,000	8,251	14,154	99,455	0
		99n	No reports								
		00o	50	0	0	0	63,000	288	6,375	69,713	0
		00n	No reports								
*	Sodium azide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	190,310	556,000	0	0	93,341	3,906,934	166,060	4,912,645	110
		98o	34,600	440,942	0	0	11,732	590,062	45,526	1,122,862	5
		98n	0	0	0	0	36,074	0	191,601	227,675	0
		99o	15,800	148,200	0	0	12,180	297,891	11,616	485,687	3
		99n	0	0	0	0	160,650	16	33,887	194,553	0
		00o	26,800	74,500	0	0	16,423	255,258	3,860	376,841	0
		00n	0	0	0	0	349,823	18	35,106	384,947	0
*	Sodium dicamba	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	800	15,200	16,000	0
		98o	0	0	0	0	414,800	46,680	9,546	471,026	0
		98n	No reports								
		99o	0	0	0	0	248,383	0	5,400	253,783	0
		99n	No reports								
		00o	0	0	0	0	133,000	7,000	7,760	147,760	0
		00n	No reports								

Note Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
128-04-1	*	Sodium dimethyl-dithiocarbamate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	63	2,746	10	0	0	2,756	125,357	128,113
			98o	84	12,254	4,868	0	13,367	30,489	295,696	326,185
			98n	9	7	0	0	324,284	324,291	12,564	336,855
			99o	75	5,651	4	0	0	5,655	276,157	281,812
			99n	7	487	0	0	420,623	421,110	33,498	454,608
			00o	64	7,113	4	0	0	7,117	583,700	590,817
			00n	10	1	0	0	171,133	171,134	135,345	306,479
62-74-8	*	Sodium fluoro-acetate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	2	4	0	0	0	4	153	157
			00o	No reports							
			00n	1	0	0	0	0	0	0	0
7632-00-0	*	Sodium nitrite	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	357	291,961	1,440,082	1,004,363	81,948	2,818,354	291,448	3,109,802
			98o	415	173,094	1,030,634	1,941,400	530,536	3,675,664	474,340	4,150,004
			98n	25	771	500	27,801	14,910	43,982	78	44,060
			99o	420	155,114	1,556,633	2,007,410	260,920	3,980,077	404,431	4,384,508
			99n	18	811	36,579	0	12,010	49,400	0	49,400
			00o	412	129,587	1,156,939	2,276,276	360,415	3,923,217	352,767	4,275,984
			00n	21	717	1,986	0	4,060	6,763	21,626	28,389
131-52-2	*	Sodium penta-chlorophenate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
132-27-4	*,**	Sodium o-phenyl-phenoxide	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	0	0	0	0	0	0	0
			98o	4	0	0	0	0	0	0	0
			98n	No reports							
			99o	6	10	0	11,000	250	11,260	250	11,510
			99n	No reports							
			00o	9	10	750	13,000	250	14,010	1,750	15,760
			00n	No reports							
--		Strychnine and salts	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	1	0	0	0	0	0	0	0
			99o	No reports							
			99n	3	5	0	0	0	5	171	176
			00o	No reports							
			00n	2	0	0	0	0	0	0	0

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*	Sodium dimethyl-dithiocarbamate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	250	199,200	0	0	462,188	484,448	28,159	1,174,245	5,000
		98o	250	183,221	192	0	751,668	663,564	270,556	1,869,451	0
		98n	0	1	0	3	0	430	339,284	339,718	0
		99o	250	196,401	0	0	787,982	576,882	145,520	1,707,035	0
		99n	0	0	0	0	42,326	0	454,458	496,784	0
		00o	250	158,844	0	0	532,266	583,858	388,950	1,664,168	0
		00n	0	0	0	0	45,654	0	306,479	352,133	0
*	Sodium fluoro-acetate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	0	0	0	0	124,717	0	157	124,874	0
		00o	No reports								
		00n	0	0	0	0	89,038	0	0	89,038	0
*	Sodium nitrite	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	374,426	4,657	0	0	17,461,874	3,003,853	4,002,119	24,846,929	270
		98o	391,745	17,741	0	17	38,822,470	3,310,175	5,612,675	48,154,823	9,037
		98n	42,644	0	0	0	779,173	176,989	44,292	1,043,098	0
		99o	511,277	45,498	0	20	47,177,908	2,678,112	6,157,468	56,570,283	89,000
		99n	0	0	0	0	1,169,880	200,126	49,634	1,419,640	0
		00o	631,650	205,247	211	3,832	45,135,898	2,485,398	4,375,358	52,837,594	140,087
		00n	0	0	0	0	1,467,242	242,426	30,034	1,739,702	0
*	Sodium penta-chlorophenate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
*,**	Sodium o-phenyl-phenoxide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	0	0	0
		98o	0	0	0	0	0	0	0	0	0
		98n	No reports								
		99o	0	0	0	0	0	0	11,000	11,000	0
		99n	No reports								
		00o	0	0	0	0	8,800	8,800	25,600	43,200	0
		00n	No reports								
	Strychnine and salts	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	0	0	0	0	31,974	0	0	31,974	0
		99o	No reports								
		99n	0	0	0	0	161,966	0	177	162,143	0
		00o	No reports								
		00n	0	0	0	0	120,960	20	0	120,980	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
100-42-5	**	Styrene	88	1,260	34,316,211	59,069	165	242,941	34,618,386	2,013,696	36,632,082
			95	1,577	42,143,073	4,570	209,945	96,078	42,453,666	2,741,708	45,195,374
			98o	1,575	54,557,250	243,133	345,945	322,816	55,469,144	2,081,093	57,550,237
			98n	106	22,243	15	161,738	14,398	198,394	10,577	208,971
			99o	1,590	58,452,755	3,414	191,124	376,072	59,023,365	2,143,216	61,166,581
			99n	91	31,060	271	0	94,307	125,638	86,622	212,260
			00o	1,607	57,153,754	3,351	260,005	184,189	57,601,299	2,186,574	59,787,873
			00n	94	9,112	15	0	85,000	94,127	4,602	98,729
96-09-3	**	Styrene oxide	88	6	2,314	0	0	0	2,314	750	3,064
			95	5	13	0	0	0	13	0	13
			98o	2	9	0	0	0	9	0	9
			98n	No reports							
			99o	1	7	0	0	0	7	0	7
			99n	No reports							
			00o	4	48	0	0	0	48	0	48
			00n	1	0	0	0	33,987	33,987	0	33,987
7664-93-9	*	Sulfuric acid	88	DC	DC	DC	DC	DC	DC	DC	DC
			95	1,598	22,900,996	5,363	30,035	134,812	23,071,206	4,733,342	27,804,548
			98o	838	27,897,155	22,608	690,900	55,837	28,666,500	347,593	29,014,093
			98n	485	167,296,008	1	0	85,501	167,381,510	20,000	167,401,510
			99o	790	26,382,695	13,426	1,075,050	166,992	27,638,163	99,389	27,737,552
			99n	486	154,460,473	6	0	53,789	154,514,268	20,200	154,534,468
			00o	738	28,578,774	18,305	807,650	13,211	29,417,940	222,032	29,639,972
			00n	470	120,217,202	6	0	95,650	120,312,858	64,003	120,376,861
2699-79-8	*	Sulfuryl fluoride	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	355,007	0	0	0	355,007	0	355,007
			98o	3	466,000	0	0	0	466,000	0	466,000
			98n	No reports							
			99o	3	505,600	0	0	0	505,600	0	505,600
			99n	No reports							
			00o	3	610,130	0	0	0	610,130	0	610,130
			00n	No reports							
35400-43-2	*	Sulprofos	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	247	0	0	0	247	0	247
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
34014-18-1	*	Tebuthiuron	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	5	0	0	0	5	0	5
			98o	1	10	0	0	0	10	750	760
			98n	No reports							
			99o	1	755	0	0	0	755	750	1,505
			99n	No reports							
			00o	2	1,010	0	0	0	1,010	1,500	2,510
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases co not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
** Styrene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	9,297,615	915,377	20,677,749	9,261,727	14,069,737	4,271,662	44,380,272	102,874,139	170,874
	98o	15,425,655	1,512,181	29,679,770	8,559,222	9,924,466	4,959,623	56,690,030	126,750,947	181,734
	98n	163,600	482,410	0	2,877,212	1,307,660	163,076	676,686	5,670,644	962
	99o	14,016,160	895,390	43,228,207	11,341,001	12,378,926	3,573,555	64,772,991	150,206,230	161,168
	99n	341,558	37,258	0	698,514	2,203,112	508,367	108,641	3,897,450	559
	00o	6,747,147	2,564,485	33,084,060	9,382,213	20,233,070	3,262,963	56,775,180	132,049,118	17,658
	00n	63,200	27,473	10,778	2,987,614	3,620,790	251,962	93,340	7,055,157	17,550
** Styrene oxide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	35,337	0	0	0	13	35,350	0
	98o	0	0	30,000	0	0	0	9	30,009	0
	98n	No reports								
	99o	0	0	70,000	0	0	0	7	70,007	0
	99n	No reports								
	00o	0	0	77,439	12,000	0	0	48	89,487	9
	00n	0	0	0	0	0	0	33,987	33,987	0
* Sulfuric acid	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	686,624,536	5,892,020	66,777	24,524	653,436,965	11,621,900	24,354,034	1,382,020,756	75,635
	98o	242,489,671	1,193,466	43,000	41	164,753,055	4,589,826	28,762,904	441,831,963	42,042
	98n	0	15	0	17,184	380,219,525	327	166,400,281	546,637,332	1,823
	99o	252,121,629	1,012,934	28,000	1,680	150,693,343	2,110,776	28,179,169	434,147,531	40,974
	99n	0	1,595	0	0	411,660,798	85,332	154,441,975	566,189,700	264
	00o	58,843,766	2,541,697	4,725	3,469	147,875,275	2,576,414	30,441,144	242,286,490	11,313
	00n	0	0	0	0	458,366,697	743	120,156,161	578,523,601	52,962
* Sulfuryl fluoride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	371,500	371,500	0
	98o	0	0	0	0	0	0	461,000	461,000	5,700
	98n	No reports								
	99o	0	0	0	0	0	0	505,600	505,600	0
	99n	No reports								
	00o	0	0	0	0	0	0	610,130	610,130	0
	00n	No reports								
* Sulprofos	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	1,137	0	249	1,386	0
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
* Tebuthiuron	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	1	0	0	0	1,000	1,100	1	2,102	0
	98o	4	0	0	0	860	870	1	1,735	0
	98n	No reports								
	99o	3	0	0	0	680	700	1	1,384	0
	99n	No reports								
	00o	4	0	0	0	920	1,430	501	2,855	0
	00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
3383-96-8	*	Temephos	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	2	0	0	0	0	0	0	0
			98n	1	7	0	0	0	7	0	7
			99o	1	0	0	0	0	0	0	0
			99n	1	0	0	0	0	0	0	0
			00o	1	0	0	0	0	0	0	0
			00n	1	0	0	0	0	0	0	0
5902-51-2	*	Terbacil	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	0	4,608	0	0	4,608	0	4,608
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
79-94-7	***	Tetrabromo-bisphenol A	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	NR	NR	NR	NR	NR	NR	NR	NR
			98o	NR	NR	NR	NR	NR	NR	NR	NR
			98n	NR	NR	NR	NR	NR	NR	NR	NR
			99o	NR	NR	NR	NR	NR	NR	NR	NR
			99n	NR	NR	NR	NR	NR	NR	NR	NR
			00o	47	62,387.41	10.00	0.00	197,529.00	259,926.41	537,549.30	797,475.71
			00n	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
630-20-6		1,1,1,2-Tetra-chloroethane	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	8	7,011	0	0	0	7,011	2	7,013
			98o	7	8,612	5	0	0	8,617	2	8,619
			98n	5	952	0	0	0	952	67	1,019
			99o	11	5,246	0	0	0	5,246	1	5,247
			99n	3	141	1	0	0	142	734	876
			00o	12	4,840	0	0	0	4,840	0	4,840
			00n	5	20	0	0	0	20	0	20
79-34-5	*	1,1,2,2-Tetra-chloroethane	88	13	43,865	1,903	0	29	45,797	128,750	174,547
			95	16	8,275	2,222	0	0	10,497	7	10,504
			98o	15	7,247	19	0	0	7,266	6,458	13,724
			98n	6	52	250	5	0	307	45	352
			99o	13	5,170	0	0	15	5,185	10	5,195
			99n	5	32	1	0	0	33	20	53
			00o	15	4,442	8	0	0	4,450	621	5,071
			00n	4	14	5	5	0	24	0	24
127-18-4	*,**	Tetrachloro-ethylene	88	749	36,146,115	33,314	72,250	82,144	36,333,823	1,385,378	37,719,201
			95	443	9,748,018	2,407	20,481	6	9,770,912	78,953	9,849,865
			98o	367	5,506,017	1,490	5,916	2,992	5,516,415	126,443	5,642,858
			98n	162	202,717	250	644	18,986	222,597	30,635	253,232
			99o	320	3,820,214	1,793	8,897	19,885	3,850,789	27,966	3,878,755
			99n	147	204,903	1	288	85,000	290,192	176,545	466,737
			00o	291	3,188,523	1,151	6,490	66	3,196,230	25,483	3,221,713
			00n	150	265,409	8	53,901	14,293	333,611	19,110	352,721

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** PBT chemical added to list for 2000 reporting year See Chapter 3 for more information

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Temephos	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	0	0	0	0	0	0	0	0	0
	98n	0	0	0	0	31,269	0	7	31,276	0
	99o	0	0	0	0	0	0	0	0	0
	99n	0	0	0	0	51,378	0	0	51,378	0
	00o	0	0	0	0	0	0	0	0	0
	00n	0	0	0	0	51,378	0	0	51,378	0
* Terbacil	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	5,070	7,558	4,608	17,236	0
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
*** Tetrabromo-bisphenol A	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	NR	NR	NR	NR	NR	NR	NR	NR	NR
	98o	NR	NR	NR	NR	NR	NR	NR	NR	NR
	98n	NR	NR	NR	NR	NR	NR	NR	NR	NR
	99o	NR	NR	NR	NR	NR	NR	NR	NR	NR
	99n	NR	NR	NR	NR	NR	NR	NR	NR	NR
	00o	565.00	10.00	0.00	1,849.00	6,794.00	7,637.00	787,143.11	803,998.11	0.00
	00n	0.00	0.00	0.00	0.00	168.00	0.00	0.00	168.00	0.00
1,1,1,2-Tetra-chloroethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	2,600,000	0	0	0	4,234,676	379,203	8,341	7,222,220	40
	98o	6,600,180	0	0	120,700	2,930,017	43,074	8,535	9,702,506	18
	98n	0	0	0	0	158,326	2,580,168	1,015	2,739,509	0
	99o	6,500,000	0	0	147,754	4,022,583	50,056	4,617	10,725,010	385
	99n	0	0	0	0	708,087	12,991	807	721,885	0
	00o	6,000,000	6,880	0	10,727	2,245,600	60,921	5,658	8,329,786	1
	00n	0	0	0	0	196,146	781	20	196,947	0
* 1,1,2,2-Tetra-chloroethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	6,200,000	2,233,342	846,600	880	13,754,898	150,324	10,503	23,196,547	40
	98o	6,692,000	2,339,618	597,000	0	10,254,173	119,300	8,847	20,010,938	803
	98n	0	0	0	2,214	479,168	2,560,430	125	3,041,937	0
	99o	6,492,000	3,095,391	0	0	11,976,729	53,056	4,760	21,621,936	294
	99n	0	0	0	0	386,882	0	39	386,921	0
	00o	5,202,000	337,790	1,079,075	171	17,200,229	86,138	5,113	23,910,516	13
	00n	0	0	0	0	315,917	804	18	316,739	0
*,** Tetrachloro-ethylene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	46,318,487	6,835,120	8,865,647	781,602	26,279,022	2,315,885	9,741,310	101,137,073	14,443
	98o	127,767,543	15,606,301	3,641,487	603,157	25,248,412	1,088,051	5,506,801	179,461,752	36,257
	98n	5,858,398	975,944	434	2,887,011	1,516,150	4,620,532	248,694	16,107,163	120
	99o	109,300,419	9,674,634	3,140,705	306,463	10,455,129	912,107	3,856,914	137,646,371	30,526
	99n	12,200,495	442,632	887	4,858,731	4,167,153	6,145,730	323,891	28,139,519	79
	00o	101,132,754	8,462,390	3,062,605	429,283	213,209,500	661,338	3,369,466	330,327,336	14,655
	00n	9,939,721	172,693	20,858	3,042,652	3,066,773	2,129,427	510,873	18,882,997	4,731

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** PBT chemical added to list for 2000 reporting year See Chapter 3 for more information

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number	Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
354-11-0	1,1,1,2-Tetra-chloro-2-fluoro-ethane	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	No reports							
		98o	1	23,275	1	0	0	23,276	0	23,276
		98n	No reports							
		99o	No reports							
		99n	No reports							
		00o	1	27,200	0	0	0	27,200	0	27,200
		00n	1	0	0	0	0	0	0	0
354-14-3	1,1,2,2-Tetra-chloro-1-fluoro-ethane	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	1	0	0	0	0	0	0	0
		98o	1	10	0	0	0	10	0	10
		98n	No reports							
		99o	1	10	0	0	0	10	0	10
		99n	No reports							
		00o	1	25	0	0	0	25	0	25
		00n	No reports							
961-11-5 *	Tetrachlorvinphos	88	6	251	0	0	0	251	9,270	9,521
		95	5	626	5	0	0	631	4,200	4,831
		98o	4	360	5	0	0	365	0	365
		98n	No reports							
		99o	4	196	5	0	0	201	1,037	1,238
		99n	2	5	0	0	0	5	809	814
		00o	5	444	5	0	0	449	37	486
		00n	1	0	0	0	0	0	0	0
64-75-5 *	Tetracycline hydrochloride	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	2	754	0	0	0	754	112	866
		98o	2	525	0	0	0	525	1,800	2,325
		98n	No reports							
		99o	3	0	0	0	0	0	4,300	4,300
		99n	1	0	0	0	0	0	0	0
		00o	4	10	0	0	0	10	11,550	11,560
		00n	1	0	0	0	0	0	0	0
7696-12-0 *	Tetramethrin	88	NR	NR	NR	NR	NR	NR	NR	NR
		95	2	0	0	0	0	0	0	0
		98o	2	0	0	0	0	0	0	0
		98n	No reports							
		99o	4	10,080	0	0	0	10,080	0	10,080
		99n	No reports							
		00o	3	11,088	0	0	0	11,088	0	11,088
		00n	No reports							
7440-28-0	Thallium	88	No reports							
		95	1	255	0	0	755	1,010	195	1,205
		98o	5	15	0	0	3,400	3,415	3,665	7,080
		98n	5	533	65	0	96,339	96,937	5	96,942
		99o	4	2,137	0	0	4,355	6,492	4,578	11,070
		99n	3	1,020	600	0	72,700	74,320	99,000	173,320
		00o	5	8	0	0	3,656	3,664	3,714	7,378
		00n	2	1,100	540	0	0	1,640	99,000	100,640

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
1,1,1,2-Tetrachloro-2-fluoroethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	6,600	270	0	0	0	0	21,000	27,870	0
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	7,800	0	0	0	0	550	27,200	35,550	0
	00n	0	0	0	0	0	0	0	0	0
1,1,2,2-Tetrachloro-1-fluoroethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	0	0	0	0	0	26,387	15	26,402	0
	98n	No reports								
	99o	0	0	0	0	0	67,130	15	67,145	0
	99n	No reports								
	00o	0	0	0	30,589	0	7,306	25	37,920	0
	00n	No reports								
* Tetrachlorvinphos	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	330	0	17,000	47,000	1,020	4,244	4,395	73,989	0
	98o	350	0	44,000	26,700	870	11,640	211	83,771	0
	98n	No reports								
	99o	375	0	14,000	98,900	1,131	13,640	435	128,481	0
	99n	0	0	0	0	36,510	0	61	36,571	0
	00o	370	0	21,000	34,600	1,013	23,715	330	81,028	0
	00n	0	0	0	0	62,900	275	0	63,175	0
* Tetracycline hydrochloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	1,736	677	2,413	0
	98o	0	0	0	0	0	700	2,160	2,860	0
	98n	No reports								
	99o	0	0	0	0	0	2,001	4,501	6,502	0
	99n	0	0	0	0	0	0	0	0	0
	00o	0	0	0	0	0	4,888	11,588	16,476	1
	00n	0	0	0	0	0	0	0	0	0
* Tetramethrin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	437	0	437	0
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	0	0	0	0	0	260	10,080	10,340	0
	99n	No reports								
	00o	0	0	0	0	0	0	11,088	11,088	0
	00n	No reports								
Thallium	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	688,093	3,852	0	0	0	190	31	692,166	0
	98o	0	0	52,353	1	0	9	3,406	55,769	0
	98n	0	0	0	0	21,600	1	96,826	118,427	0
	99o	9	0	0	0	0	51	6,437	6,497	0
	99n	0	0	0	0	0	0	173,000	173,000	0
	00o	1,400	0	0	0	0	29	3,732	5,161	0
	00n	0	0	0	0	0	0	100,000	100,000	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
--		Thallium compounds	88	4	253	0	0	250	503	1,256	1,759
			95	No reports							
			98o	4	1,060	250	0	409,000	410,310	259	410,569
			98n	28	34,505	749	0	10,756,608	10,791,862	2,302	10,794,164
			99o	4	654	750	0	252,800	254,204	1,583	255,787
			99n	31	4,802	2,129	0	3,109,257	3,116,188	60,062	3,176,250
			00o	7	1,942	342	0	174,855	177,139	277,627	454,766
			00n	32	9,858	1,753	0	3,664,394	3,676,005	793,071	4,469,076
148-79-8	*	Thiabendazole	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	3,929	0	0	0	3,929	0	3,929
			98o	3	0	0	0	0	0	0	0
			98n	No reports							
			99o	3	255	0	0	0	255	0	255
			99n	No reports							
			00o	3	500	0	0	0	500	1,500	2,000
			00n	No reports							
62-55-5	**	Thioacetamide	88	1	500	0	0	0	500	0	500
			95	No reports							
			98o	No reports							
			98n	1	0	0	0	0	0	0	0
			99o	No reports							
			99n	3	7	1	0	0	8	164	172
			00o	No reports							
			00n	3	5	0	0	0	5	0	5
28249-77-6	*	Thiobencarb	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	510	0	0	0	510	3,032	3,542
			98o	2	286	0	0	0	286	760	1,046
			98n	No reports							
			99o	2	343	0	0	0	343	832	1,175
			99n	No reports							
			00o	2	34	0	0	0	34	11	45
			00n	No reports							
139-65-1	**	4,4'-Thiodianiline	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
59669-26-0	*	Thiodicarb	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	376	0	0	0	376	500	876
			98o	3	359	0	0	0	359	5,966	6,325
			98n	No reports							
			99o	3	438	0	0	6,843	7,281	239	7,520
			99n	No reports							
			00o	3	355	0	0	0	355	0	355
			00n	1	0	0	0	0	0	0	0

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
	Thallium compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	0	0	0	0	0	250	310,000	310,250	100,000
		98n	2,133	0	0	0	0	1	10,794,136	10,796,270	650
		99o	0	0	0	0	0	315	194,746	195,061	60,000
		99n	1,884	0	0	0	0	0	3,009,808	3,011,692	120,000
		00o	220,000	8,700	0	0	0	29	449,214	677,943	4,300
		00n	1,810	5	0	0	0	0	4,044,573	4,046,388	54,000
*	Thiabendazole	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	1	0	0	2,160	1,200	1,931	3,740	9,032	0
		98o	0	0	0	0	0	747	0	747	0
		98n	No reports								
		99o	0	0	0	0	1,500	5,094	75	6,669	0
		99n	No reports								
		00o	0	0	0	0	1,600	5,045	240	6,885	0
		00n	No reports								
**	Thioacetamide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	0	0	0	0	0	0	0	0	0
		99o	No reports								
		99n	0	0	0	0	181,229	0	167	181,396	0
		00o	No reports								
		00n	0	0	0	0	105,451	780	5	106,236	0
*	Thiobencarb	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	620	3,162	3,782	0
		98o	747	0	0	0	0	198	1,772	2,717	0
		98n	No reports								
		99o	0	0	0	0	0	105	120	225	0
		99n	No reports								
		00o	6	0	0	0	0	11	34	51	0
		00n	No reports								
**	4,4'-Thiodianiline	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
*	Thiodicarb	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	1,500	0	0	0	41,139	160	180	42,979	0
		98o	108,880	0	0	0	34,243	19,476	362	162,961	0
		98n	No reports								
		99o	84,500	0	0	0	35,246	11,073	1,200	132,019	0
		99n	No reports								
		00o	156,750	0	0	0	34,073	12,681	1,653	205,157	0
		00n	0	0	0	0	15,456	25	0	15,481	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
23564-06-9	*	Thiophanate ethyl	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
23564-05-8	*	Thiophanate-methyl	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	502	0	0	0	502	0	502
			98o	7	431	0	0	0	431	442	873
			98n	No reports							
			99o	10	493	0	0	0	493	7,165	7,658
			99n	No reports							
			00o	9	740	0	0	0	740	3,709	4,449
			00n	No reports							
79-19-6		Thiosemi-carbazide	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	2	3	0	0	0	3	98	101
			00o	No reports							
			00n	1	0	0	0	0	0	0	0
62-56-6	*,**	Thiourea	88	26	2,004	16,951	5,940	750	25,645	2,303	27,948
			95	26	1,630	1,487	5,000	250	8,367	4,269	12,636
			98o	27	1,422	358	1,250	250	3,280	5,895	9,175
			98n	4	0	0	0	0	0	0	0
			99o	23	789	257	0	250	1,296	1,108	2,404
			99n	6	213	1	0	0	214	189	403
			00o	22	1,283	266	0	250	1,799	946	2,745
			00n	8	0	0	0	28,553	28,553	0	28,553
137-26-8	*	Thiram	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	61	2,856	50	0	0	2,906	98,617	101,523
			98o	65	3,428	22	0	1,751	5,201	87,165	92,366
			98n	3	15	0	0	0	15	25	40
			99o	59	3,374	30	0	589	3,993	71,214	75,207
			99n	5	42	1	0	0	43	222	265
			00o	65	3,913	40	0	9,873	13,826	740,399	754,225
			00n	4	25	0	0	0	25	0	25
1314-20-1		Thorium dioxide	88	3	1,580	0	0	0	1,580	677,549	679,129
			95	1	1	0	0	0	1	0	1
			98o	2	0	0	0	0	0	0	0
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Thiophanate ethyl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
* Thiophanate-methyl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	320	0	0	0	0	2,677	507	3,504	0
	98o	10,000	0	0	0	0	3,431	436	13,867	0
	98n	No reports								
	99o	11,800	0	0	0	0	13,725	2,810	28,335	0
	99n	No reports								
	00o	470	0	0	0	0	5,781	5,126	11,377	0
	00n	No reports								
Thiosemicarbazide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	0	0	0	0	67,904	0	101	68,005	0
	00o	No reports								
	00n	0	0	0	0	49,589	0	0	49,589	0
*,** Thiourea	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	7,082	0	0	0	18,535	11,867	10,652	48,136	0
	98o	0	245	0	0	54,525	16,111	8,822	79,703	0
	98n	0	0	0	0	0	0	0	0	0
	99o	0	0	0	0	98,133	6,349	2,191	106,673	0
	99n	0	0	0	0	284,371	0	400	284,771	0
	00o	0	55,452	0	0	14,161	20,785	2,495	92,893	0
	00n	0	0	0	0	93,651	0	28,553	122,204	13,000
* Thiram	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	18,712	31,501	0	5	407	10,622	101,354	162,601	0
	98o	25,341	31,339	0	870	0	19,988	90,444	167,982	0
	98n	0	0	0	0	42,192	0	40	42,232	0
	99o	34,797	32,328	0	925	0	25,452	74,774	168,276	0
	99n	0	0	0	0	261,724	0	260	261,984	0
	00o	33,951	21,459	0	1,022	0	22,883	82,833	162,148	0
	00n	0	0	0	0	138,262	795	25	139,082	0
Thorium dioxide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	26,000	0	0	0	0	2,600	1	28,601	0
	98o	3,100	0	0	0	0	0	330	3,430	0
	98n	No reports								
	99o	0	0	0	0	0	0	0	0	0
	99n	No reports								
	00o	0	0	0	0	27,000	0	0	27,000	0
	00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	On-site Releases: Surface Water Discharges Pounds	On-site Releases: Underground Injection Pounds	On-site Releases: Releases to Land Pounds	On-site Releases: Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
7550-45-0		Titanium tetrachloride	88	41	78,668	0	0	1,400	80,068	0	80,068
			95	33	20,299	0	0	0	20,299	32,282	52,581
			98o	34	31,991	0	0	0	31,991	380	32,371
			98n	3	0	0	0	0	0	0	0
			99o	33	27,302	0	0	0	27,302	260,390	287,692
			99n	1	0	0	0	0	0	0	0
			00o	37	31,060	0	0	41	31,101	239,857	270,958
			00n	1	0	0	0	0	0	0	0
108-88-3	*	Toluene	88	4,012	300,062,684	196,957	1,473,666	644 168	302,377,475	9,620,391	311,997,866
			95	3,496	148,209,769	53,493	310,643	177,353	148,751,258	894,959	149,646,217
			98o	3,045	98,127,877	38,184	590,241	71,215	98,827,517	1,326,121	100,153,638
			98n	828	938,011	5,589	133,774	30,106	1,107,480	366,200	1,473,680
			99o	2,847	90,136,176	32,124	612,896	109,234	90,890,430	1,299,182	92,189,612
			99n	790	815,074	14,264	125,489	209,517	1,164,344	777,100	1,941,444
			00o	2,735	79,920,420	37,928	316,830	51,944	80,327,122	1,162,400	81,489,521
			00n	784	1,337,161	2,569	196,980	96,952	1,633,662	334,938	1,968,600
584-84-9	**	Toluene-2,4-diisocyanate	88	258	165,062	0	0	1,040	166,102	36,178	202,280
			95	64	7,802	0	0	0	7,802	611	8,413
			98o	54	6,849	5	0	0	6,854	4,402	11,256
			98n	6	2	0	0	0	2	0	2
			99o	51	4,386	5	0	0	4,391	14,442	18,833
			99n	11	456	1	0	14,201	14,658	531	15,189
			00o	51	3,282	5	0	0	3,287	14,780	18,067
			00n	11	70	0	0	12,160	12,230	0	12,230
91-08-7	**	Toluene-2,6-diisocyanate	88	189	492,192	0	0	510	492,702	9,444	502,146
			95	40	3,043	0	0	0	3,043	153	3,196
			98o	24	1,560	0	0	0	1,560	1,079	2,639
			98n	1	0	0	0	0	0	0	0
			99o	25	2,395	0	0	0	2,395	1,258	3,653
			99n	3	5	0	0	0	5	160	165
			00o	24	447	0	0	0	447	3,670	4,117
			00n	2	0	0	0	0	0	0	0
26471-62-5	**	Toluene diisocyanate (mixed isomers)	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	196	48,856	105	0	275	49,236	26,263	75,499
			98o	176	55,406	0	0	534	55,940	32,450	88,390
			98n	4	0	0	0	0	0	0	0
			99o	176	34,794	2,500	0	256	37,550	29,085	66,635
			99n	7	38	1	0	0	39	6,985	7,024
			00o	170	34,631	2,500	0	2,729	39,860	18,395	58,255
			00n	8	24	0	0	27,010	27,034	0	27,034
95-53-4	**	o-Toluidine	88	18	46,922	1,902	250	5,024	54,098	670	54,768
			95	23	13,499	256	22,140	12	35,907	55	35,962
			98o	19	7,750	5	17,020	5	24,780	11	24,791
			98n	No reports							
			99o	20	7,714	1	10,010	0	17,725	15	17,740
			99n	5	22	1	0	0	23	620	643
			00o	20	11,061	25	7,040	0	18,126	234	18,360
			00n	5	3	0	0	0	3	161	164

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
Titanium tetrachloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	129,787	0	0	23,836,598	2,928	52,646	24,021,959	11
	98o	0	196,905	0	1	27,810,226	142,054	32,619	28,181,805	265
	98n	0	0	0	0	122,039	0	0	122,039	0
	99o	0	176,544	0	1	26,254,965	268,223	27,464	26,727,197	31
	99n	0	0	0	0	17,391	0	0	17,391	0
	00o	0	148,838	0	0	26,156,029	245,617	30,906	26,581,390	544
	00n	0	0	0	0	0	0	0	0	0
* Toluene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	1,003,694,351	25,405,761	214,695,485	78,875,766	192,319,445	19,729,534	145,428,668	1,680,149,010	370,172
	98o	1,063,247,036	24,267,552	238,796,347	77,057,633	246,270,842	23,806,245	100,101,323	1,773,546,978	622,924
	98n	30,282,040	3,635,211	303,316	76,798,051	19,686,833	11,316,481	4,235,322	146,257,254	350,281
	99o	986,640,480	26,137,795	226,219,936	84,627,383	255,476,794	23,028,131	91,738,500	1,693,869,019	425,084
	99n	32,504,301	429,145	618,910	73,385,495	30,035,247	13,279,029	1,234,067	151,486,194	206,449
	00o	1,049,864,539	29,903,569	214,193,345	89,429,796	309,483,213	19,401,279	81,895,096	1,794,170,837	299,421
	00n	31,423,692	624,423	694,189	74,224,829	30,076,448	8,001,257	3,109,117	148,153,955	16,955
** Toluene-2,4-diisocyanate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	427	0	37,664	16,408	3,311	20,201	6,224	84,235	10
	98o	393	440	1,410	9,546	13,193	23,162	9,398	57,542	389
	98n	0	0	0	40	8,723	0	302	9,065	300
	99o	80	0	0	24,316	10,188	43,136	7,907	85,627	14
	99n	0	0	0	418	1,304,958	944	14,975	1,321,295	0
	00o	15,650	3,000	0	7,562	15,599	23,822	15,027	80,660	20
	00n	0	0	0	200	410,305	2,674	28,130	441,309	0
** Toluene-2,6-diisocyanate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	107	0	9,416	3,705	652	1,542	7,510	22,932	2
	98o	98	0	0	1,276	501	2,613	1,546	6,034	0
	98n	0	0	0	0	0	0	0	0	0
	99o	220	0	0	48	648	8,890	3,275	13,081	0
	99n	0	0	0	0	133,019	0	166	133,185	0
	00o	0	750	0	1,538	512	4,363	3,096	10,259	0
	00n	0	0	0	0	87,289	0	0	87,289	0
** Toluene diisocyanate (mixed isomers)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	15,224	2,784	5,800,065	60,045	2,876,258	195,978	60,100	9,010,454	11,604
	98o	7,260	1,996	7,812,428	2,054,210	1,029,937	299,050	71,319	11,276,200	17,912
	98n	0	0	0	40	188,824	0	1	188,865	0
	99o	13,350	438	5,076,288	67,400	4,084,948	178,241	39,325	9,459,990	18,373
	99n	0	0	0	0	501,918	4,530	4,997	511,445	0
	00o	4,048	1,126	3,337,852	31,966	31,928,842	657,821	52,401	36,014,056	3,118
	00n	0	0	0	300	600,391	1,679	27,325	629,695	0
** o-Toluidine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	49	0	95,623	139,297	98,950	127,937	35,498	497,354	0
	98o	220	198	303,180	120,352	150,729	105,606	24,800	705,085	461
	98n	No reports								
	99o	0	0	1,953,205	515,259	150,020	57,511	17,689	2,693,684	5,132
	99n	0	0	2	24	607,614	0	639	608,279	0
	00o	0	0	592,030	206,023	187,639	169,814	22,454	1,177,960	1
	00n	0	0	0	0	382,159	791	103	383,053	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
636-21-5	**	o-Toluidine hydrochloride	88	No reports							
			95	No reports							
			98o	No reports							
			98n	1	0	0	0	0	0	0	0
			99o	No reports							
			99n	3	10	1	0	0	11	164	175
			00o	No reports							
			00n	3	0	0	0	0	0	0	0
8001-35-2	*,**	Toxaphene	88	No reports							
			95	No reports							
			98o	No reports							
			98n	5	13	0	0	25,476	25,489	113	25,602
			99o	No reports							
			99n	4	16	1	0	0	17	14	31
		Not comparable	00o	1	0 10	0.00	0 00	0.00	0 10	0.00	0 10
		to prior years***	00n	15	20 88	1 62	0.21	5,928.02	5,950.73	176 14	6,126.87
43121-43-3	*	Triadimefon	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	4	3	0	0	1	4	0	4
			98n	No reports							
			99o	4	0	0	0	0	0	0	0
			99n	No reports							
			00o	3	2	0	0	0	2	0	2
			00n	No reports							
2303-17-5	*	Triallate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	588	0	0	0	588	24,076	24,664
			98o	2	519	0	0	0	519	21,640	22,159
			98n	No reports							
			99o	3	511	0	0	0	511	436	947
			99n	1	2	0	0	0	2	60	62
			00o	2	507	0	0	0	507	996	1,503
			00n	1	2	0	0	0	2	0	2
68-76-8		Triaziquone	88	No reports							
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
101200-48-0	*	Tribenuron methyl	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	1	0	0	0	1	0	1
			98o	1	1	0	0	0	1	0	1
			98n	No reports							
			99o	1	1	0	0	0	1	0	1
			99n	No reports							
			00o	1	1	0	0	0	1	0	1
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release *Breakdown of Underground Injection* and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose *reporting definition has changed since 1988*)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
** o-Toluidine hydrochloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	0	0	0	0	0	0	0	0	0
	99o	No reports								
	99n	0	0	0	0	191,883	0	168	192,051	0
	00o	No reports								
	00n	0	0	0	0	107,125	733	0	107,858	0
*,** Toxaphene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	0	0	0	0	103,929	1	25,602	129,532	0
	99o	No reports								
	99n	0	0	0	0	134,998	28	27	135,053	0
Not comparable	00o	0 00	0.00	1,072.00	0 00	0 00	0 00	0 10	1,072 10	0.00
to prior years***	00n	0 00	0 00	0 00	0 00	210,240 69	589 24	6,008 37	216,838 30	0.00
* Triadimefon	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	0	0	0	0	280	1,984	4	2,268	0
	98n	No reports								
	99o	0	0	0	0	0	0	0	0	0
	99n	No reports								
	00o	0	0	0	0	342	458	2	802	0
	00n	No reports								
* Triallate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	19,838	0	0	0	93,000	52,830	24,149	189,817	0
	98o	0	0	0	0	6,480	97,751	22,410	126,641	0
	98n	No reports								
	99o	840	0	0	0	1,700	47,151	1,446	51,137	0
	99n	0	0	0	0	11,125	0	62	11,187	0
	00o	884	0	0	0	35	32,121	1,994	35,034	0
	00n	0	0	0	0	22,075	766	2	22,843	0
Triaziquone	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	No reports								
	00o	No reports								
	00n	No reports								
* Tribenuron methyl	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	5,144	1	5,145	0
	98o	0	0	0	0	0	13,016	1	13,017	0
	98n	No reports								
	99o	0	0	0	0	0	14,832	1	14,833	0
	99n	No reports								
	00o	0	0	0	0	0	17,700	1	17,701	0
	00n	No reports								

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
1983-10-4	*	Tributyltin fluoride	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	23	0	0	23	0	23
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
2155-70-6	*	Tributyltin methacrylate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	25	23	0	0	48	0	48
			98o	2	14	10	0	0	24	0	24
			98n	No reports							
			99o	3	510	0	0	0	510	0	510
			99n	No reports							
			00o	5	1,965	0	0	0	1,965	260	2,225
			00n	No reports							
78-48-8	*	S,S,S-Tributyltri-thiophosphate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	1,730	2	0	0	1,732	0	1,732
			98o	2	250	36	0	0	286	0	286
			98n	No reports							
			99o	2	250	161	0	0	411	0	411
			99n	No reports							
			00o	1	0	12	0	0	12	0	12
			00n	No reports							
52-68-6	*	Trichlorfon	88	5	253	0	0	0	253	487	740
			95	2	0	0	0	0	0	0	0
			98o	5	2	0	0	0	2	0	2
			98n	No reports							
			99o	2	0	0	0	0	0	0	0
			99n	1	39	0	0	11,242	11,281	6,058	17,339
			00o	2	0	0	0	0	0	0	0
			00n	1	409	0	0	0	409	11,518	11,927
76-02-8		Trichloroacetyl chloride	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	1	0	0	0	1	0	1
			98o	1	1	0	0	0	1	0	1
			98n	No reports							
			99o	1	1	0	0	0	1	0	1
			99n	No reports							
			00o	1	1	0	0	0	1	0	1
			00n	No reports							
120-82-1	*	1,2,4-Trichloro-benzene	88	57	1,532,913	31,628	7,408	3,073	1,575,022	164,144	1,739,166
			95	31	168,490	259	12,500	0	181,249	41,648	222,897
			98o	27	165,368	191	8,960	20	174,539	1,651	176,190
			98n	7	765	250	5	0	1,020	507	1,527
			99o	28	172,488	266	7,100	10	179,864	1,409	181,273
			99n	6	1,142	1	0	0	1,143	543	1,686
			00o	24	157,673	114	2,900	0	160,687	3,702	164,389
			00n	10	1,022	5	250	0	1,277	924	2,201

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (*for RCRA Subtitle C landfills*) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) ***(continued)***

			Recycled		Energy Recovery		Treated				
	Chemical	Year	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*	Tributyltin fluoride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	250	0	23	273	0
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
*	Tributyltin methacrylate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	25	9,096	4,320	48	13,489	0
		98o	253	0	0	419	0	0	34	706	0
		98n	No reports								
		99o	3,458	0	0	3,218	0	3,100	3,330	13,106	0
		99n	No reports								
		00o	0	11,613	0	6,210	11	5,660	2,765	26,259	0
		00n	No reports								
*	S,S,S-Tributyltri-thiophosphate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	2,541	316	1,717	4,574	0
		98o	0	0	0	0	10,276	691	367	11,334	0
		98n	No reports								
		99o	0	0	0	0	13,441	694	292	14,427	0
		99n	No reports								
		00o	0	0	0	0	1,891	85	12	1,988	0
		00n	No reports								
*	Trichlorfon	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	0	0	0
		98o	0	0	0	0	213	2,831	2	3,046	0
		98n	No reports								
		99o	0	0	0	0	0	890	890	1,780	0
		99n	0	0	0	0	1,331	0	17,339	18,670	0
		00o	0	0	0	0	0	480	480	960	0
		00n	0	0	0	0	785	0	11,927	12,712	0
	Trichloroacetyl chloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	0	1	1	0
		98o	0	0	0	0	0	0	1	1	0
		98n	No reports								
		99o	0	0	0	0	0	0	1	1	0
		99n	No reports								
		00o	0	0	0	0	0	0	1	1	0
		00n	No reports								
*	1,2,4-Trichloro-benzene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	40,745	10,541	2,400	108,129	1,137,925	393,319	183,352	1,876,411	6,386
		98o	1,115,301	22,393	66,119	15,718	625,874	199,720	175,704	2,220,829	35
		98n	0	0	0	9,500	88,370	216	697	98,783	0
		99o	1,262,006	6,595	1,494,567	59,115	1,036,698	234,017	180,739	4,273,737	181
		99n	0	0	0	2,963	469,316	1	698	472,978	0
		00o	1,203,313	15,884	539,513	17,908	469,926	199,764	163,101	2,609,409	9
		00n	0	0	0	3,925	494,756	1,395	969	501,045	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
71-55-6	*	1,1,1-Trichloro-ethane	88	3,921	180,841,849	95,624	1,000	204,923	181,143,396	5,947,625	187,091,021
			95	812	23,587,848	1,118	126	38,690	23,627,782	125,028	23,752,810
			98o	129	816,617	417	0	4,980	822,014	11,791	833,805
			98n	38	24,356	250	0	0	24,606	19,178	43,784
			99o	59	404,408	45	0	276	404,729	521	405,250
			99n	35	6,495	0	0	15,705	22,200	52,546	74,746
			00o	47	263,607	74	0	2	263,683	257	263,940
			00n	28	3,814	11	5	14,296	18,126	1,433	19,559
79-00-5	*	1,1,2-Trichloro-ethane	88	29	1,741,442	5,303	0	89	1,746,834	19,810	1,766,644
			95	22	280,352	870	0	0	281,222	113	281,335
			98o	22	279,470	540	0	1	280,011	1,203	281,214
			98n	13	743	250	5	0	998	1,123	2,121
			99o	25	198,488	925	0	123	199,536	91	199,627
			99n	10	633	1	0	13,665	14,299	393	14,692
			00o	22	90,294	567	0	110	90,971	6,919	97,890
			00n	11	645	5	5	11,703	12,358	538	12,896
79-01-6	*,**	Trichloroethylene	88	953	55,943,736	13,801	390	21,186	55,979,113	1,466,469	57,445,582
			95	747	26,284,104	1,477	550	3,577	26,289,708	74,145	26,363,853
			98o	579	13,193,121	872	588	800	13,195,381	98,024	13,293,405
			98n	151	30,405	10	5	0	30,420	28,029	58,449
			99o	500	10,534,615	1,043	0	138,522	10,674,180	114,290	10,788,470
			99n	142	25,195	1	0	10,345	35,541	52,671	88,212
			00o	464	9,685,925	585	0	110	9,686,620	117,079	9,803,699
			00n	131	30,091	8	47,877	9,603	87,579	53,222	140,801
75-69-4	*	Trichlorofluoro-methane (CFC-11)	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	54	959,461	410	22	0	959,893	272	960,165
			98o	29	441,009	1,484	0	0	442,493	1	442,494
			98n	14	2,258	250	250	0	2,758	108	2,866
			99o	30	395,516	1,000	0	0	396,516	2	396,518
			99n	11	7,141	1	0	10,078	17,220	14,674	31,894
			00o	30	301,348	961	0	0	302,309	0	302,309
			00n	12	2,457	5	0	0	2,462	141	2,603
95-95-4	*	2,4,5-Trichloro-phenol	88	1	91	0	0	0	91	20	111
			95	No reports							
			98o	1	198	36	0	69	303	0	303
			98n	2	3	0	0	0	3	0	3
			99o	1	263	41	0	78	382	0	382
			99n	5	16	1	0	21,844	21,861	269	22,130
			00o	1	327	51	0	0	378	0	378
			00n	4	7	0	0	36,021	36,028	77	36,105
88-06-2	*,**	2,4,6-Trichloro-phenol	88	3	250	50	12,000	0	12,300	10	12,310
			95	1	161	210	0	0	371	0	371
			98o	1	114	26	0	0	140	0	140
			98n	3	4	0	0	0	4	10	14
			99o	2	86	38	0	2	126	0	126
			99n	3	4	1	0	2,000	2,005	6	2,011
			00o	1	104	29	0	1	134	0	134
			00n	4	5	0	0	0	5	2	7

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* 1,1,1-Trichloroethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	60,033,102	3,743,237	3,718,698	1,060,204	1,108,250	1,340,934	23,405,162	94,409,587	14,502
	98o	1,173,558	157,496	2,508,207	489,624	455,010	236,114	781,290	5,801,299	19,815
	98n	1,103,154	7,057	474,196	2,237,132	1,424,735	671,480	28,453	5,946,207	30
	99o	580,363	61,748	1,537,877	506,102	1,635,948	134,998	420,735	4,877,771	847
	99n	1,104,696	144,857	505,336	978,272	2,689,147	317,804	28,120	5,768,232	136
	00o	563,428	24,504	543,804	612,215	2,063,051	233,459	256,232	4,296,693	78
	00n	412,382	12,200	802,456	731,361	2,406,312	44,936	17,958	4,427,605	148
* 1,1,2-Trichloroethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	18,699,000	11,817,647	12,091,000	200,596	24,559,416	3,265,021	275,059	70,907,739	481
	98o	55,855,000	12,399,585	4,961,599	47	43,283,780	2,017,174	284,126	118,801,311	48
	98n	0	0	0	33,005	1,166,146	38,490	1,550	1,239,191	0
	99o	50,477,000	16,038,204	189,669	3,866	43,700,428	754,218	201,011	111,364,396	892
	99n	0	0	0	208,583	2,586,183	54	14,082	2,808,902	0
	00o	50,811,610	7,445,333	4,067,013	180	42,179,641	1,293,606	95,999	105,893,382	159
	00n	0	0	0	75,380	1,522,859	95	12,341	1,610,675	0
*,** Trichloroethylene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	153,798,396	8,515,873	2,624,155	1,112,208	5,218,927	2,311,864	26,001,213	199,582,636	221,300
	98o	133,198,282	4,809,933	2,418,830	654,278	6,221,614	1,215,489	13,126,663	161,645,089	123,658
	98n	3,921,526	3,302	3,559	816,314	1,338,616	6,251,209	37,442	12,371,968	372
	99o	132,298,261	4,029,727	3,511,302	703,687	4,516,041	1,281,010	10,411,995	156,752,023	50,250
	99n	5,192,547	34,880	4,093	571,103	2,342,614	652,490	62,997	8,860,724	108
	00o	121,000,997	3,519,538	1,789,179	801,172	4,070,320	1,095,945	9,768,255	142,045,406	50,579
	00n	5,200,656	25,350	3,387	975,956	1,617,563	491,114	130,027	8,444,053	3,777
* Trichlorofluoromethane (CFC-11)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	138,712	227,287	618,422	170,699	4,200	291,955	961,314	2,412,589	1,036
	98o	0	138,866	210,039	10,519	63,773	284,534	442,016	1,149,747	25
	98n	0	0	0	117,603	569,323	13,150	2,135	702,211	0
	99o	36,075	92,780	1,189,772	31,000	39,251	447,241	403,355	2,239,474	8,686
	99n	47,450	0	0	93,082	578,508	10,859	22,108	752,007	0
	00o	0	102,023	232,249	608	69,210	386,574	302,611	1,093,275	2
	00n	171,898	0	0	11,684	507,878	4,064	2,416	697,940	0
* 2,4,5-Trichlorophenol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	0	0	0	0	23,152	5	303	23,460	0
	98n	0	0	0	0	28,000	0	3	28,003	0
	99o	0	0	0	0	26,020	0	382	26,402	0
	99n	0	0	0	0	317,709	40	22,153	339,902	0
	00o	0	0	0	0	32,443	0	378	32,821	0
	00n	0	0	0	0	89,256	0	36,105	125,361	0
*,** 2,4,6-Trichlorophenol	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	1,294,115	0	371	1,294,486	0
	98o	0	0	0	0	1,100,000	0	140	1,100,140	0
	98n	0	0	0	0	28,000	0	10	28,010	0
	99o	0	0	0	0	1,264,603	46	120	1,264,769	0
	99n	0	0	0	0	134,939	0	7	134,946	2,000
	00o	0	0	0	0	1,170,000	0	133	1,170,133	0
	00n	0	13,933	0	0	73,994	0	6	87,933	0

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
96-18-4	**	1,2,3-Trichloro-propane	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	5	11,081	1,600	0	0	12,681	0	12,681
			98o	8	13,837	300	0	0	14,137	6,758	20,895
			98n	No reports							
			99o	9	13,931	2,300	0	0	16,231	0	16,231
			99n	3	28	0	0	8,189	8,217	4,412	12,629
			00o	10	16,594	5,498	0	28	22,120	0	22,120
			00n	1	20	0	0	0	20	0	20
57213-69-1	*	Triclopyr triethyl-ammonium salt	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	3	0	0	0	3	0	3
			98o	3	6	0	0	0	6	0	6
			98n	No reports							
			99o	1	37	0	0	0	37	0	37
			99n	No reports							
			00o	3	9	0	0	0	9	0	9
			00n	No reports							
121-44-8		Triethylamine	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	153	2,138,276	27,705	309,512	14,010	2,489,503	17,181	2,506,684
			98o	174	1,571,464	26,281	186,190	23,755	1,807,690	56,293	1,863,983
			98n	22	1,641	0	0	0	1,641	20	1,661
			99o	169	1,972,119	17,937	28,659	35,032	2,053,747	289,541	2,343,288
			99n	17	3,139	0	0	0	3,139	259	3,398
			00o	168	1,890,672	25,406	18,990	13,937	1,949,005	117,451	2,066,456
			00n	18	2,098	1,812	0	0	3,910	2,521	6,431
1582-09-8	*	Trifluralin	88	17	3,277	601	0	0	3,878	40,557	44,435
			95	23	17,144	92	0	8,250	25,486	24,490	49,976
			98o	18	9,180	250	0	5	9,435	29,888	39,323
			98n	2	13	0	0	0	13	0	13
			99o	19	5,183	0	0	0	5,183	14,631	19,814
			99n	1	2	0	0	0	2	0	2
		Not comparable	00o	20	5,497 46	0 00	0 00	8,155.00	13,652.46	2,705 10	16,357 56
		to prior years***	00n	11	6 69	0 00	0 00	11,216.00	11,222.69	43.57	11,266.26
26644-46-2	*	Triforine	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	755	0	0	0	755	0	755
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	1	187	0	0	0	187	0	187
			00n	No reports							
95-63-6		1,2,4-Trimethyl-benzene	88	294	4,265,650	10,088	7,964	61,583	4,345,285	200,616	4,545,901
			95	821	7,731,612	8,822	2,886	43,921	7,787,241	60,078	7,847,319
			98o	893	7,800,979	7,587	6,650	14,752	7,829,968	167,584	7,997,552
			98n	636	134,050	948	0	3,045	138,043	13,357	151,400
			99o	901	7,804,130	5,231	2,295	9,320	7,820,976	102,721	7,923,697
			99n	604	152,720	1,619	0	1,054	155,393	8,912	164,305
			00o	923	7,284,928	6,828	3,710	7,966	7,303,432	131,261	7,434,693
			00n	597	220,542	968	0	3,754	225,264	47,591	272,855

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

	Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
**	1,2,3-Trichloro-propane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	88,000	9	460,000	0	1,330,000	10,000,000	12,551	11,890,560	0
		98o	7,100,000	0	870,000	0	2,553,000	5,949,995	14,187	16,487,182	0
		98n	No reports								
		99o	9,300,000	0	678,000	0	46,789,300	660,000	16,243	57,443,543	0
		99n	0	0	0	0	495,664	0	12,629	508,293	0
		00o	12,000,000	0	5,610,685	0	56,314,442	3,219,000	22,182	77,166,309	0
		00n	0	0	0	0	483,606	0	20	483,626	0
*	Triclopyr triethyl-ammonium salt	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	4	110	3	117	0
		98o	0	0	0	0	0	70	6	76	0
		98n	No reports								
		99o	0	0	0	0	55	68	37	160	0
		99n	No reports								
		00o	0	0	0	0	15	130	9	154	0
		00n	No reports								
	Triethylamine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	488,423	428,122	34,114	531,959	1,615,455	1,052,880	2,619,129	6,770,082	7
		98o	332,653	677,152	380,472	399,750	4,290,600	864,021	2,135,632	9,080,280	114
		98n	0	0	0	12,584	112,632	3,831	1,748	130,795	0
		99o	113,198	738,564	479,881	465,999	3,669,969	1,106,617	2,668,010	9,242,238	373
		99n	0	0	6,865	2,386	192,036	818	2,782	204,887	107
		00o	151,958	917,447	218,850	681,705	3,741,654	849,728	2,099,094	8,660,436	209
		00n	0	0	1,720	6,954	1,197,422	3,350	8,218	1,217,664	0
*	Trifluralin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	2,107	0	0	3	99,980	76,583	54,675	233,348	9,312
		98o	80,000	0	0	0	6,880	75,025	30,415	192,320	0
		98n	0	0	0	0	29,827	0	10	29,837	0
		99o	89,000	0	0	0	1,700	71,489	23,220	185,409	0
		99n	0	0	0	0	38,510	0	2	38,512	0
	Not comparable	00o	7,501.00	0.00	0.00	0 00	121.00	77,106.00	21,993 31	106,721 31	45 00
	to prior years***	00n	0.00	0 00	0.00	228 00	16,588.08	32,701 00	11,266.16	60,783 24	0.00
*	Triforine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	300	890	1,190	0
		98o	0	0	0	0	0	0	0	0	0
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	0	0	0	0	0	118	182	300	0
		00n	No reports								
	1,2,4-Trimethyl-benzene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	15,823,608	1,532,353	5,119,569	3,000,631	9,484,423	541,590	7,954,793	43,456,967	11,067
		98o	14,522,822	1,914,690	8,203,022	3,655,945	10,456,412	736,916	8,035,998	47,525,805	4,415
		98n	1,750,455	614,296	12,446	196,546	617,270	115,464	830,095	4,136,572	149,331
		99o	19,070,746	1,625,178	11,802,710	3,549,543	10,780,933	636,985	8,009,062	55,475,157	5,756
		99n	2,786,952	104,736	15,322	1,460,211	395,085	33,741	130,101	4,926,148	25,820
		00o	10,226,025	2,166,067	8,685,184	3,692,172	11,996,864	695,705	7,435,394	44,897,411	5,366
		00n	2,404,550	112,067	5,262	1,440,369	247,607	118,497	202,663	4,531,015	4,730

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

*** Data for PBT chemicals, due to threshold change for 2000 reporting year, are not comparable to prior year reporting See Chapter 3 for more information

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	On-site Releases: Surface Water Discharges Pounds	On-site Releases: Underground Injection Pounds	On-site Releases: Releases to Land Pounds	On-site Releases: Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
2655-15-4	*	2,3,5-Trimethyl-phenyl methyl-carbamate	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	No reports							
			00o	No reports							
			00n	No reports							
639-58-7	*	Triphenyltin chloride	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	1	0	0	0	0	0	0	0
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	1	3	0	0	0	3	0	3
			99n	No reports							
			00o	1	1	0	0	0	1	0	1
			00n	No reports							
76-87-9	*	Triphenyltin hydroxide	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	3	21	0	0	0	21	250	271
			98o	3	7	0	0	0	7	235	242
			98n	No reports							
			99o	5	1,001	0	0	0	1,001	1,085	2,086
			99n	No reports							
			00o	5	1,002	0	0	0	1,002	0	1,002
			00n	No reports							
126-72-7	**	Tris(2,3-dibromo-propyl) phosphate	88	No reports							
			95	No reports							
			98o	No reports							
			98n	1	0	0	0	0	0	0	0
			99o	No reports							
			99n	1	2	1	0	0	3	5	8
			00o	No reports							
			00n	2	0	0	0	0	0	0	0
72-57-1	**	Trypan blue	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	1	0	0	0	0	0	0	0
			98n	1	0	0	0	0	0	0	0
			99o	No reports							
			99n	3	5	0	0	0	5	163	168
			00o	No reports							
			00n	3	0	0	0	0	0	0	0
51-79-6	**	Urethane	88	11	145,123	0	0	0	145,123	1,350	146,473
			95	4	124	0	0	0	124	3,750	3,874
			98o	2	1,413	22	0	0	1,435	0	1,435
			98n	1	4	0	0	0	4	2,224	2,228
			99o	1	0	0	0	0	0	0	0
			99n	6	90	1	0	14,249	14,340	929	15,269
			00o	4	21	29,580	0	33	29,634	0	29,634
			00n	6	23	0	0	12,634	12,657	0	12,657

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

	Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*	2,3,5-Trimethyl-phenyl methyl-carbamate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	No reports								
		99o	No reports								
		99n	No reports								
		00o	No reports								
		00n	No reports								
*	Triphenyltin chloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	2,555	0	0	2,555	0
		98o	0	0	0	0	0	0	0	0	0
		98n	No reports								
		99o	0	0	0	0	26,226	0	3	26,229	0
		99n	No reports								
		00o	0	0	0	0	10,273	0	1	10,274	0
		00n	No reports								
*	Triphenyltin hydroxide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	1	109,816	390	401	110,608	0
		98o	0	0	0	0	16,465	1,273	237	17,975	0
		98n	No reports								
		99o	0	0	0	0	6,900	2,867	609	10,376	0
		99n	No reports								
		00o	0	0	0	0	24,570	1,158	87	25,815	0
		00n	No reports								
**	Tris(2,3-dibromo-propyl) phosphate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	No reports								
		98n	0	0	0	0	0	0	0	0	0
		99o	No reports								
		99n	0	0	0	0	33,000	0	2	33,002	0
		00o	No reports								
		00n	0	0	0	0	12,345	975	0	13,320	0
**	Trypan blue	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	No reports								
		98o	0	0	0	0	0	0	0	0	0
		98n	0	0	0	0	0	0	0	0	0
		99o	No reports								
		99n	0	0	0	0	192,524	0	168	192,692	0
		00o	No reports								
		00n	0	0	0	0	106,258	781	0	107,039	0
**	Urethane	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
		95	0	0	0	0	0	1,165	4,742	5,907	2,500
		98o	0	0	0	0	26,432	0	1,435	27,867	0
		98n	0	0	0	0	142,049	0	2,228	144,277	0
		99o	0	0	0	0	0	0	0	0	0
		99n	0	0	518	1,473	680,048	0	14,765	696,804	0
		00o	0	0	0	0	8	0	29,634	29,642	0
		00n	0	0	11,724	13,409	394,649	34,723	12,657	467,162	0

Note Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
7440-62-2		Vanadium (except when contained in an alloy)	88	DC	DC	DC	DC	DC	DC	DC	DC
			95	DC	DC	DC	DC	DC	DC	DC	DC
			98o	DC	DC	DC	DC	DC	DC	DC	DC
			98n	DC	DC	DC	DC	DC	DC	DC	DC
			99o	DC	DC	DC	DC	DC	DC	DC	DC
			99n	DC	DC	DC	DC	DC	DC	DC	DC
			00o	42	17,173	2,259	8,121	300,413	327,966	156,667	484,633
			00n	29	64,040	1,381	0	1,099,153	1,164,574	1,064,181	2,228,755
--		Vanadium compounds	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	NR	NR	NR	NR	NR	NR	NR	NR
			98o	NR	NR	NR	NR	NR	NR	NR	NR
			98n	NR	NR	NR	NR	NR	NR	NR	NR
			99o	NR	NR	NR	NR	NR	NR	NR	NR
			99n	NR	NR	NR	NR	NR	NR	NR	NR
			00o	129	111,847	303,790	1,192,983	7,677,369	9,285,989	1,480,871	10,766,860
			00n	330	2,053,402	285,126	0	66,997,380	69,335,908	4,759,949	74,095,857
50471-44-8	*	Vinclozolin	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	2	0	0	0	0	0	0	0
			98o	2	10	0	0	0	10	750	760
			98n	No reports							
			99o	1	0	0	0	0	0	0	0
			99n	No reports							
			00o	1	0	0	0	0	0	0	0
			00n	No reports							
108-05-4	**	Vinyl acetate	88	146	6,087,497	10,021	2,109,851	18,889	8,226,258	21,811	8,248,069
			95	156	4,104,397	8,269	783,829	1,717	4,898,212	45,052	4,943,264
			98o	195	3,344,797	3,665	285,141	1,125	3,634,728	108,410	3,743,138
			98n	12	35,943	0	0	55,000	90,943	18,957	109,900
			99o	186	3,363,281	3,948	286,764	2,029	3,656,022	35,734	3,691,756
			99n	12	28,832	0	0	36,311	65,143	336,802	401,945
			00o	187	3,132,667	2,377	223,927	5,955	3,364,926	17,697	3,382,623
			00n	11	19,020	0	0	98,854	117,874	481	118,355
593-60-2	**	Vinyl bromide	88	2	4,950	400	0	0	5,350	0	5,350
			95	2	54,930	0	0	0	54,930	0	54,930
			98o	1	0	0	0	0	0	0	0
			98n	No reports							
			99o	2	500	0	0	0	500	0	500
			99n	No reports							
			00o	No reports							
			00n	No reports							
75-01-4	**	Vinyl chloride	88	53	1,439,189	2,051	53	4,409	1,445,702	4,555	1,450,257
			95	48	1,044,665	525	33	1	1,045,224	15,645	1,060,869
			98o	46	884,214	78	149	0	884,441	68,039	952,480
			98n	9	1,473	0	5	0	1,478	1,175	2,653
			99o	45	850,910	102	405	1	851,418	477	851,895
			99n	6	1,691	1	0	0	1,692	13,538	15,230
			00o	45	770,457	177	63	0	770,697	615	771,312
			00n	7	1,887	5	43,587	0	45,479	8	45,487

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
Vanadium (except when contained in an alloy)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	DC	DC	DC	DC	DC	DC	DC	DC	DC
	98o	DC	DC	DC	DC	DC	DC	DC	DC	DC
	98n	DC	DC	DC	DC	DC	DC	DC	DC	DC
	99o	DC	DC	DC	DC	DC	DC	DC	DC	DC
	99n	DC	DC	DC	DC	DC	DC	DC	DC	DC
	00o	94,386	794,051	0	0	0	10,970	416,194	1,315,601	1
	00n	0	90,657	0	0	0	0	2,184,938	2,275,595	70,529
Vanadium compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	NR	NR	NR	NR	NR	NR	NR	NR	NR
	98o	NR	NR	NR	NR	NR	NR	NR	NR	NR
	98n	NR	NR	NR	NR	NR	NR	NR	NR	NR
	99o	NR	NR	NR	NR	NR	NR	NR	NR	NR
	99n	NR	NR	NR	NR	NR	NR	NR	NR	NR
	00o	1,369,462	2,699,275	8	0	46,762	60,596	10,188,015	14,364,118	51,966
	00n	23,547	5,070	0	0	119,364	91	70,988,877	71,136,949	3,200,000
* Vinclozolin	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	1,030	0	1,030	0
	98o	0	0	0	0	650	660	1	1,311	0
	98n	No reports								
	99o	0	0	0	0	0	0	0	0	0
	99n	No reports								
	00o	0	0	0	0	0	0	0	0	0
	00n	No reports								
** Vinyl acetate	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	311,385	533,356	15,379,353	6,544,593	19,204,933	9,194,987	5,195,025	56,363,632	14,788
	98o	993,710	86,990	18,008,261	14,361,541	27,164,709	1,452,870	3,578,002	65,646,083	62,310
	98n	0	1	0	2,444,457	741,302	45,992	109,100	3,340,852	0
	99o	1,158,990	13,249	21,815,185	12,228,901	18,156,883	697,376	3,704,605	57,775,189	2,313,481
	99n	0	0	0	1,345,712	2,516,017	393,581	66,430	4,321,740	0
	00o	1,038,436	3,896	18,585,538	10,634,962	12,555,899	1,923,013	3,449,688	48,191,432	13,764
	00n	0	0	0	297,156	2,204,338	1,273	117,960	2,620,727	3
** Vinyl bromide	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	36	0	54,910	54,946	0
	98o	0	0	0	0	0	0	0	0	0
	98n	No reports								
	99o	0	0	0	0	0	0	50	50	0
	99n	No reports								
	00o	No reports								
	00n	No reports								
** Vinyl chloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	318,121,038	90,685	23,368,507	20,853	40,034,145	55,842	1,051,733	382,742,803	31,505
	98o	377,999,298	857,715	40,383,408	14,028	36,705,295	275,230	873,395	457,108,369	19,820
	98n	0	0	0	6,752	320,294	315,826	1,421	644,293	0
	99o	421,183,195	785,132	28,607,150	13,644	35,675,866	439,386	902,010	487,606,383	57,475
	99n	139,884	0	0	124,028	378,842	101	1,587	644,442	10
	00o	427,180,214	754,310	25,758,167	11,120	34,091,352	273,550	933,650	489,002,363	20,698
	00n	0	0	3	2,191	342,334	173	45,496	390,197	0

Note. Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
75-35-4	*	Vinylidene chloride	88	21	296,353	3,462	170	429	300,414	44,281	344,695
			95	24	194,160	642	0	0	194,802	260	195,062
			98o	25	179,621	311	218	0	180,150	3	180,153
			98n	8	1,903	250	45,812	82,000	129,965	12,354	142,319
			99o	25	152,040	132	99	0	152,271	8	152,279
			99n	8	6,644	1	0	14,945	21,590	929	22,519
			00o	24	145,662	1,624	199	36	147,521	7	147,528
			00n	11	1,603	10	5	328,936	330,554	1,177	331,731
--		Warfarin and salts	88	NR	NR	NR	NR	NR	NR	NR	NR
			95	No reports							
			98o	No reports							
			98n	No reports							
			99o	No reports							
			99n	4	10	0	0	0	10	327	337
			00o	No reports							
			00n	3	2	0	0	0	2	72	74
108-38-3		m-Xylene	88	68	2,463,043	2,566	0	18,045	2,483,654	107,746	2,591,400
			95	62	1,163,526	892	569	13,838	1,178,825	8,650	1,187,475
			98o	75	1,202,991	1,065	4,199	860	1,209,115	29,929	1,239,044
			98n	12	4,315	5	0	0	4,320	10	4,330
			99o	70	983,487	85	3,578	3,945	991,095	45,753	1,036,848
			99n	14	14,881	0	0	3	14,884	0	14,884
			00o	61	723,037	188	3,555	5,534	732,314	17,368	749,682
			00n	13	9,962	5	0	20	9,987	1,025	11,012
95-47-6		o-Xylene	88	66	2,241,814	2,786	250	22,461	2,267,311	52,881	2,320,192
			95	67	1,384,483	869	569	485	1,386,406	1,152	1,387,558
			98o	82	1,345,071	960	3,088	41,350	1,390,469	101,998	1,492,467
			98n	22	1,885	5	0	0	1,890	779	2,669
			99o	80	882,321	82	3,379	44,284	930,066	138,162	1,068,228
			99n	19	11,910	0	0	3	11,913	0	11,913
			00o	77	750,384	2,560	3,376	606	756,926	34,570	791,496
			00n	21	1,400	5	0	20	1,425	0	1,425
106-42-3		p-Xylene	88	48	5,992,743	3,200	0	49,226	6,045,169	31,108	6,076,277
			95	39	2,937,312	532	569	29,401	2,967,814	1,261	2,969,075
			98o	51	1,841,632	725	3,227	55	1,845,639	18,212	1,863,851
			98n	8	13,269	5	0	0	13,274	0	13,274
			99o	45	1,811,010	87	3,578	280	1,814,955	22,692	1,837,647
			99n	10	22,169	0	0	290	22,459	2,106	24,565
			00o	45	1,289,699	193	3,555	166	1,293,613	8,242	1,301,855
			00n	11	40,614	5	0	0	40,619	0	40,619
1330-20-7	*	Xylene (mixed isomers)	88	3,470	158,995,558	204,480	144,728	558,257	159,903,023	6,455,911	166,358,934
			95	3,331	97,994,099	33,834	123,396	99,791	98,251,120	592,263	98,843,383
			98o	2,894	69,458,517	52,147	121,085	41,461	69,673,210	817,197	70,490,407
			98n	820	573,520	5,349	2,788	70,548	652,205	687,916	1,340,121
			99o	2,760	67,341,083	25,083	49,979	42,887	67,459,032	1,084,583	68,543,615
			99n	782	501,709	5,008	37,541	211,146	755,404	1,037,349	1,792,753
			00o	2,636	56,709,188	73,110	76,143	32,899	56,891,340	980,632	57,871,972
			00n	773	1,022,526	9,354	75,035	110,346	1,217,261	350,381	1,567,642

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases do not include transfers to disposal sent to other TRI Facilities that reported the *amount as an on-site release* Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are *currently active ingredients in* EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
* Vinylidene chloride	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	1,438,000	55	190,253	102,442	6,754,882	85,282	177,994	8,748,908	16,577
	98o	1,830,000	8,605	125,000	82,946	3,494,987	15,029	180,208	5,736,775	81
	98n	0	1	0	8,069	799,244	2,116	142,052	951,482	0
	99o	3,977,000	21,860	100,000	65,165	1,498,463	40,816	152,251	5,855,555	145
	99n	0	0	0	1,799	1,046,020	194	56,156	1,104,169	0
	00o	1,620,000	2,925	200,000	44,472	1,751,584	23,788	146,739	3,789,508	773
	00n	77,000	0	0	43,000	1,157,193	43,921	35,023	1,356,137	2
Warfarin and salts	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	No reports								
	98o	No reports								
	98n	No reports								
	99o	No reports								
	99n	0	0	0	0	309,501	1	338	309,840	0
	00o	No reports								
	00n	0	0	0	0	202,284	0	74	202,358	0
m-Xylene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	1,917,515	27,006	4,141,480	246,197	3,100,716	131,806	1,172,514	10,737,234	1,431
	98o	1,912,614	162,262	9,462,285	242,126	1,084,879	124,993	1,237,076	14,226,235	19,071
	98n	2,913	80	0	194,683	0	1,045	4,129	202,850	0
	99o	1,333,398	110,315	11,882,415	308,166	925,163	93,300	1,004,817	15,657,574	15,144
	99n	2,311	2,357	0	178,261	35,289	10,616	14,997	243,831	134
	00o	4,344,222	350,264	10,109,064	371,350	864,439	40,644	749,575	16,829,558	426
	00n	4	80	0	73,871	25,342	20	10,740	110,057	5
o-Xylene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	317,695	59,486	15,563,897	1,859,258	2,219,346	814,980	1,448,714	22,283,376	11,491
	98o	102,107	14,743	6,965,568	1,756,281	2,049,794	815,174	1,401,232	13,104,899	14,899
	98n	1,260	475	0	192,004	49,441	552	1,999	245,731	0
	99o	75,426	7,358	7,989,008	1,838,625	2,063,253	409,431	1,162,419	13,545,520	13,448
	99n	972,480	1,406	0	181,552	0	4,662	11,963	1,172,063	66
	00o	8,170,607	147	5,654,825	542,976	2,576,880	963,735	796,640	18,705,810	4,746
	00n	884,787	237	0	413,650	37,410	131	296,613	1,632,828	5
p-Xylene	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	468,689	8,192	2,168,729	3,563	645,579	8,722	2,958,765	6,262,239	17,280
	98o	125,970	395	4,670,124	7,322	2,866,722	156,678	1,861,654	9,688,865	10,987
	98n	870	0	0	182,126	0	0	10,070	193,066	3,200
	99o	147,153	7	683,856	57,153	1,902,287	69,312	1,863,844	4,723,612	8,633
	99n	693	0	0	177,081	35,289	8,309	21,566	242,938	3,200
	00o	135,147	7	2,663,410	54,402	2,226,748	53,976	1,295,143	6,428,833	7,157
	00n	43,556	0	0	73,759	25,038	0	40,610	182,963	3,192
* Xylene (mixed isomers)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	135,273,984	41,599,755	141,841,997	69,991,106	55,709,651	10,014,137	97,341,722	551,772,352	239,117
	98o	101,458,533	35,401,690	140,783,137	58,417,095	64,135,326	13,689,989	71,971,925	485,857,695	178,787
	98n	29,475,714	3,616,563	730,790	85,959,498	10,113,113	8,962,909	3,806,731	142,665,318	75,735
	99o	102,130,746	34,093,115	118,796,740	56,829,060	60,770,607	9,304,472	69,006,599	450,931,339	160,114
	99n	30,994,604	603,065	990,581	53,859,120	10,092,041	11,365,761	838,213	108,743,385	204,107
	00o	82,950,068	40,328,957	108,403,362	55,321,109	65,392,682	9,239,719	59,541,202	421,177,098	110,079
	00n	28,499,469	113,800	1,492,522	51,548,785	9,026,144	6,296,116	2,943,440	99,920,276	18,271

Note: Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1A: TRI On-site and Off-site Releases, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

CAS Number		Chemical	Year	Total Forms Number	On-site Releases: Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds	Total On and Off-site Releases Pounds
87-62-7	*,**	2,6-Xylidine	88	2	337	1,537	0	0	1,874	0	1,874
			95	4	304	0	0	0	304	0	304
			98o	2	453	0	0	0	453	0	453
			98n	1	0	0	0	0	0	0	0
			99o	1	1	0	0	0	1	0	1
			99n	1	0	0	0	0	0	0	0
			00o	1	1	0	0	0	1	0	1
			00n	No reports							
7440-66-6	*	Zinc (fume or dust)	88	644	3,455,937	849,544	140,010	25,617,365	30,062,856	31,450,587	61,513,443
			95	435	2,044,750	45,183	0	6,410,739	8,500,672	9,613,624	18,114,296
			98o	422	1,315,291	9,715	1	9,179,810	10,504,817	10,244,603	20,749,420
			98n	39	2,647,359	31,044	294,942	66,841,176	69,814,521	290,445	70,104,966
			99o	411	1,340,488	15,545	1	3,922,090	5,278,124	12,064,852	17,342,976
			99n	26	2,411,681	7,900	0	53,878,527	56,298,108	182,737	56,480,845
			00o	391	778,951	21,843	2	1,938,102	2,738,898	13,653,489	16,392,387
			00n	22	2,482,534	121	0	17,674,751	20,157,406	91,641	20,249,047
--		Zinc compounds	88	1,668	7,266,122	1,201,410	109,555	113,361,611	121,938,698	84,392,234	206,330,932
			95	2,717	4,836,196	1,091,662	397,844	113,661,737	119,987,439	107,401,702	227,389,141
			98o	2,940	6,946,801	1,266,595	246,175	122,715,084	131,174,655	124,750,719	255,925,374
			98n	458	1,537,308	555,882	21,751,486	659,327,056	683,171,732	13,092,090	696,263,822
			99o	2,979	5,570,415	1,014,131	228,062	128,610,032	135,422,640	121,796,821	257,219,461
			99n	464	2,473,554	370,693	21,949,310	702,884,710	727,678,267	15,582,606	743,260,873
			00o	3,001	6,140,049	902,893	247,239	100,673,276	107,963,457	166,826,835	274,790,292
			00n	461	1,373,337	373,258	22,333,205	727,413,291	751,493,091	11,318,993	762,812,084
12122-67-7	*	Zineb	88	2	1,250	0	0	0	1,250	2,600	3,850
			95	1	0	0	0	0	0	0	0
			98o	1	100	0	0	0	100	0	100
			98n	1	1	0	0	0	1	1	2
			99o	1	10	0	0	0	10	0	10
			99n	No reports							
			00o	No reports							
			00n	No reports							
--		Mixtures and other trade name products	88	178	3,450,870	59,460	0	18,699	3,529,029	10,662,177	14,191,206
			95	30	334,194	3,171	0	0	337,365	4,400	341,765
			98o	47	66,604	0	0	9	66,613	86,098	152,711
			98n	7	7,550	0	0	0	7,550	0	7,550
			99o	42	217,930	0	0	500	218,430	25,649	244,079
			99n	5	665	0	0	0	665	0	665
			00o	42	608	5	0	40,100	40,713	44,378	85,091
			00n	7	349	0	0	0	349	0	349
--		Trade secrets	88	4	0	0	0	0	0	0	0
			95	11	0	0	0	0	0	0	0
			98o	11	30	0	0	0	30	0	30
			98n	No reports							
			99o	3	0	0	0	0	0	0	0
			99n	No reports							
			00o	3	0	0	0	0	0	0	0
			00n	No reports							

Note: On-site Releases are from Section 5 of Form R Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs Off-site Releases co not include transfers to disposal sent to other TRI Facilities that reported the amount as an on-site release Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year

98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Table A-1B: Quantities of TRI Chemicals in Waste, by Chemical, 1988, 1995 and 1998-2000 (Original and New Industries) *(continued)*

Chemical	Year	Recycled On-site Pounds	Recycled Off-site Pounds	Energy Recovery On-site Pounds	Energy Recovery Off-site Pounds	Treated On-site Pounds	Treated Off-site Pounds	Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
*,**2,6-Xylidine	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	8,000	0	300	258	254	8,812	0
	98o	0	0	22,235	0	0	0	453	22,688	0
	98n	0	4	0	0	0	0	0	4	0
	99o	0	0	0	2,900	17	0	1	2,918	0
	99n	0	0	0	4	0	0	0	4	0
	00o	0	0	0	3,900	29	0	1	3,930	0
	00n	No reports								
* Zinc (fume or dust)	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	27,847,425	78,266,137	0	53,501	3,815,022	6,485,878	10,739,564	127,207,527	35,448
	98o	28,252,595	49,278,126	0	125,059	652,837	754,552	30,780,859	109,844,028	2,282,657
	98n	0	69,000	0	0	0	0	70,053,321	70,122,321	0
	99o	6,124,363	55,049,834	0	58,144	606,425	614,115	29,092,558	91,545,439	11
	99n	0	290,000	0	0	0	0	56,474,807	56,764,807	5
	00o	6,601,018	42,940,368	0	141,555	968,888	258,973	16,855,162	67,765,964	50
	00n	0	0	0	0	0	234	20,242,727	20,242,961	119,157
Zinc compounds	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	130,342,228	252,528,915	446,100	365,736	4,040,010	26,357,552	214,108,656	628,189,197	11,143,135
	98o	66,816,553	271,085,763	367,541	266,611	4,104,167	12,437,106	303,013,293	658,091,034	1,357,710
	98n	9,211,682	1,768,477	0	4,057	1,549,772	142,033	696,904,604	709,580,625	48,531
	99o	80,854,163	285,609,244	142,280	173,258	22,271,314	9,314,666	305,786,461	704,151,386	233,011,708
	99n	9,808,684	2,380,741	0	0	66,270	292,189	703,830,699	716,378,583	34,034,359
	00o	82,459,227	298,076,144	144,790	159,186	10,296,512	11,580,581	300,759,631	703,476,071	4,426,315
	00n	18,209,903	1,103,790	0	68,740	190,074	65,021	743,956,204	763,593,732	15,034,561
* Zineb	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	0	0	0	100	0	0	100	200	0
	98n	0	0	0	0	11,715	0	2	11,717	0
	99o	0	0	0	0	0	320	9	329	0
	99n	No reports								
	00o	No reports								
	00n	No reports								
Mixtures and other trade name products	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	8,025	19,282	96,280,793	375,381	72,738,249	294,743	384,186	170,100,659	0
	98o	6,651,848	14,255	1,367,661	14,955	23,598	72,626	101,166	8,246,109	0
	98n	3,775,989	0	0	0	0	0	7,392	3,783,381	0
	99o	39,297	7,316	700	43,758	233,209	12,009	261,660	597,949	0
	99n	0	0	0	0	0	2,599	665	3,264	0
	00o	0	24,344	0	32,445	16,435	16,414	40,476	130,114	10
	00n	0	0	0	0	0	0	350	350	0
Trade secrets	88	NA	NA	NA	NA	NA	NA	NA	NA	NA
	95	0	0	0	0	0	0	0	0	0
	98o	0	0	0	0	2,700	0	30	2,730	0
	98n	No reports								
	99o	0	0	0	0	0	0	0	0	0
	99n	No reports								
	00o	0	0	0	0	0	0	0	0	0
	00n	No reports								

Note. Data from Section 8 (Current Year) of Form R
98o, 99o and 00o are data from original industries, 98n, 99n and 00n are data from new industries
NA not applicable (waste management data not required for 1988 reporting year)
NR not reportable (chemicals added to the TRI list after 1988)
DC definition change (chemicals whose reporting definition has changed since 1988)
No reports No reports received for the chemical in that reporting year

* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the U S) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides

** Chemicals meeting the OSHA carcinogen standard (see Appendix C for more information)

Appendix B

TRI Release and Waste Management Data for Metals and Metal Compounds, 2000

Table B-1: TRI On-site and Off-site Releases of Metals and Metal Compounds. Original and New Industries, 2000

Chemical		Total Air Emissions Pounds	Surface Water Discharges Pounds	On-site Releases: Underground Injection: Class I Wells Pounds	Class II-V Wells Pounds	On-site Land Releases: RCRA Subtitle C Landfills Pounds	Other Landfills Pounds	Land Treatment Pounds	Surface Impound-ments Pounds	Other Disposal Pounds	Releases Total On-site Releases Pounds	Off-site Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
Aluminum* (CAS Number 7429-90-5)	O	1,598,143	4,798	0	0	65,002	2,407,851	0	0	3,409,299	7,485,093	8,037,720	15,522,813
	N	48,997	0	0	0	5,878,343	87,018	0	36,747	30,852	6,081,957	2,570,523	8,652,480
Antimony and antimony compounds	O	89,224	45,955	40,140	0	111,700	211 540	372	186,441	230,109	915,481	3,513,025	4,428,506
	N	13 939	35,154	0	670,064	1,365,762	223,659	38 000	9,648,219	12,727,300	24,722,097	303,259	25,025 356
Arsenic and arsenic compounds	O	69,530	4,797	68,949	0	1,023,547	1,307,133	250	5,642,472	207,567	8,324,245	2,120,279	10,444,525
	N	175,130	163,015	139,108	1,740,036	4,017,438	3,100,199	91,676	107,245,847	347,915,100	464,587,549	3,180,145	467,767,694
Barium and barium compounds	O	886,573	839,861	43	0	168,796	3,926,565	54 575	930,495	649,946	7,456,854	7,895 374	15,352 228
	N	2,315,842	930,602	70 254	2,099,400	14,851,370	89,126,303	2,119,460	74 531 256	66,176,902	252,221,389	43 363,538	295,584,927
Beryllium and beryllium compounds	O	4,905	320	0	0	2,251	84,193	5	35	0	91,709	19,010	110,719
	N	6,009	8,297	0	0	282,678	155,090	1	246,309	104,840	803,224	29,079	832,303
Cadmium and cadmium compounds	O	27,793	8,937	34	0	2,945	67,437	5	272,596	255,546	635,293	2,082,411	2,717 704
	N	4,791	610	69 250	110,000	1,752,337	7,706	0	2,049,970	2,434,390	6,429,054	570,897	6,999,951
Chromium and chromium compounds	O	935,437	128,819	1,442,973	0	210,334	7,187,963	11,158	3,159,395	3,522,328	16,598,407	21,484,633	38,083,039
	N	318,429	112,476	2,000,250	60,000	5,420,452	4,792,759	131,634	14,450,584	91,547,526	118,834,110	6,378,968	125,213,078
Cobalt and cobalt compounds	O	65,316	54,286	38,125	2	46,221	41,669	3 916	1,460	280,920	531,915	1,013,561	1,545 476
	N	46 218	26 760	0	18,001	279,852	1 314,193	27,613	3,392 032	10,225,506	15,330 175	349,974	15,680,149
Copper and copper compounds	O	2,310,303	123,960	317,812	0	464,078	25,522,521	124,478	8,666,516	25,442,703	62,972,371	23,483,719	86,456,090
	N	525,224	342,118	190,005	1,300,011	17,360,386	7,069,929	142,869	309,028,561	960,157,967	1,296,117,070	7,403,235	1,303,520,305
Lead and lead compounds	O	1,172,197	52,146	212,480	2 837	733,985	3,394,253	2 686	2,908,069	6 437,571	14 916,225	19,293,429	34,209,654
	N	313 636	42,943	57 523	8,300,001	19,821,875	7,299,969	86,718	106,142 782	192,959,404	335,024,851	4,856,148	339 880,999
Manganese and manganese compounds	O	2,593,885	5,265,050	9,513,796	250	1,616,348	38,195,632	721,360	15,291,848	6,232,722	79,430,891	55,991,256	135,422,147
	N	554,398	778,602	39,000	1,278,700	9,672,236	28,589,275	450,686	35,211,604	287,403,901	363,978,402	8,262,355	372,240,757
Mercury and mercury compounds	O	54,757	742	74	262	2 194	11,659	158	4,045	833	74,724	114 286	189 010
	N	109,736	1,560	1,858	9,520	89,104	34,415	3,716	990,361	2,151 796	3,392,066	735,586	4 127,653
Nickel and nickel compounds	O	999,594	104,250	157,763	0	61,963	1,810,985	8,056	1,520,529	916,510	5,579,650	10,593,131	16,172,781
	N	696,983	154,164	550,250	44,005	8,158,033	4,172,542	181,847	11,887,919	29,086,725	54,932,468	7,744,115	62,676,583

Note **On-site Releases** are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R

Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, include to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI facilities that reported the amount as an on-site release

O Original industries **N** New Industries

* Only fume or dust forms are reportable
** Except when contained in an alloy

Table B-1: TRI On-site and Off-site Releases of Metals and Metal Compounds, Original and New Industries, 2000 *(continued)*

Chemical		Total Air Emissions Pounds	Surface Water Discharges Pounds	On-site Releases: Underground Injection: Class I Wells Pounds	Underground Injection: Class II-V Wells Pounds	On-site Land Releases: RCRA Subtitle C Landfills Pounds	Other Landfills Pounds	Land Treatment Pounds	Surface Impound-ments Pounds	Other Disposal Pounds	Releases: Total On-site Releases Pounds	Off-site: Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
Selenium and selenium compounds	O	131,209	4,833	27,699	0	2,279	73,260	250	105,089	91,108	435,727	168,975	604,702
	N	511,201	52,234	40,246	0	3,197,446	416,013	47	488,086	2,993,876	7,699,149	1,664,066	9,363,215
Silver and silver compounds	O	18,865	6,544	214	0	2,250	21,010	520	11,000	43,035	103,438	37,647	141,085
	N	2,654	289	19,000	170,000	521,305	5,689	0	257,433	3,254,060	4,230,430	301,496	4,531,926
Thallium and thallium compounds	O	1,950	342	0	0	3,651	56,855	0	118,000	5	180,803	281,341	462,144
	N	10,958	2,293	0	0	293,180	471,733	12,856	862,769	2,023,856	3,677,645	892,071	4,569,716
Vanadium** and vanadium compounds	O	129,020	306,049	1,201,104	0	9,665	3,763,734	3,521	1,855,448	2,345,414	9,613,955	1,637,538	11,251,493
	N	2,117,442	286,507	0	0	699,108	10,885,734	366,740	18,579,127	37,565,824	70,500,482	5,824,130	76,324,612
Zinc* and zinc compounds	O	6,919,000	924,736	246,135	1,106	4,893,852	23,917,193	96,018	9,269,059	64,435,256	110,702,356	180,480,323	291,182,679
	N	3,855,871	373,379	311,363	22,021,842	40,142,330	15,496,407	299,473	325,976,502	363,173,330	771,650,497	11,410,634	783,061,131
Total	O	18,007,700	7,876,426	13,267,341	4,457	9,421,062	112,001,453	1,027,328	49,942,497	114,500,872	326,049,135	338,247,657	664,296,792
	N	11,627,458	3,311,003	3,488,107	37,821,580	133,803,235	173,248,633	3,953,336	1,021,026,108	2,411,933,155	3,800,212,615	105,840,219	3,906,052,834

Note: On-site Releases are from Section 5 of Form R **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R

Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, include to POTWs **Off-site Releases** do not include transfers to disposal sent to other TRI facilities that reported the amount as an on-site release

O Original industries **N** New Industries

* Only fume or dust forms are reportable
** Except when contained in an alloy

Table B-2: TRI Off-site Releases of Metals and Metal Compounds, Original and New Industries, 2000

Chemical		Storage Only[a] Pounds	Solidification /Stabilization Metals Only[b] Pounds	Wastewater Treatment (Excluding POTWs) Metals Only[c] Pounds	Transfers to POTWs Metals Only[d] Pounds	Under-ground Injection Pounds	Landfills/ Disposal Surface Impound-ments Pounds	Land Treatment Pounds	Other Land Disposal Pounds	Other Off-site Management Pounds	Transfers to Waste Broker for Disposal Pounds	Unknown[e] Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds
Aluminum* (CAS Number 7429-90-5)	**O**	**2,737,241**	**385,875**	**27,559**	**4,724**	**0**	**4,757,949**	**0**	**34,510**	**434,849**	**9,810**	**15**	**8,392,532**
	N	**0**	**0**	**0**	**0**	**0**	**2,569,006**	**0**	**0**	**1,517**	**0**	**0**	**2,570,523**
Antimony and antimony compounds	O	27,442	433 524	19,760	86,479	4 352	2 770 207	6 803	62 972	81 689	142 506	122,000	3,757,734
	N	0	162,818	743	250	728	56,925	79 613	1,256	16,817	53 896	198	373,244
Arsenic and arsenic compounds	**O**	**15,201**	**533,387**	**1,070**	**1,385**	**559,507**	**1,280,836**	**250**	**30,483**	**47,295**	**94,573**	**10,589**	**2,574,576**
	N	**250**	**710,962**	**157**	**757**	**19,250**	**2,323,679**	**28,451**	**123,400**	**117,501**	**11,890**	**2,110**	**3,338,407**
Barium and barium compounds	O	40 518	2,608,025	16 218	399 212	26	4 607 538	115,033	1,057,447	299 883	280 891	182,511	9,607 303
	N	212,607	1,189,520	1,601	2,842	17 017	29 212,619	209 785	7 830,047	6 334,837	405,428	47,849	45 464,152
Beryllium and beryllium compounds	**O**	**0**	**2,151**	**56**	**6**	**0**	**18,395**	**0**	**0**	**5**	**0**	**0**	**20,613**
	N	**0**	**0**	**0**	**0**	**0**	**42,880**	**0**	**1,949**	**250**	**0**	**0**	**45,079**
Cadmium and cadmium compounds	O	0	522,760	173	3 148	261	596 726	6,650	103	13 687	1,176,245	41,380	2,361,133
	N	0	366,531	52	260	1,521	296,544	0	0	2,171	443	2 194	669,717
Chromium and chromium compounds	**O**	**117,644**	**6,808,333**	**1,011,769**	**313,801**	**432,488**	**13,898,629**	**9,418**	**1,198,206**	**418,818**	**624,658**	**156,570**	**24,990,334**
	N	**1,069**	**1,031,691**	**161,270**	**13,201**	**22,414**	**4,681,603**	**66,057**	**385,783**	**261,356**	**122,901**	**176,544**	**6,923,889**
Cobalt and cobalt compounds	O	4	100,717	6 517	22,728	260	506,250	149	6,873	18 046	235 971	139,564	1,037,079
	N	250	2,918	0	1	0	261 987	0	68,498	20,253	16,817	0	370 724
Copper and copper compounds	**O**	**763,436**	**4,514,801**	**1,259,450**	**889,392**	**333,699**	**16,101,028**	**26,756**	**657,074**	**308,960**	**580,113**	**1,536,942**	**26,971,650**
	N	**68**	**1,757,367**	**31,447**	**8,524**	**29,610**	**5,056,297**	**71,051**	**431,995**	**297,682**	**38,181**	**11,763**	**7,733,985**
Lead and lead compounds	O	77 877	13,024,896	47 907	38 764	7,723	15,700,790	8,178	147,525	193,378	2,242,563	65,118	31,554,719
	N	14,021	1,513,124	40,605	1,721	25,910	3 301 854	54 668	97,450	187,032	465,193	32 575	5,734 153

Note Off-site Releases are from Section 6 (transfers off-site to disposal of Form R

O: Original industries **N** New industries

* *Only fume or dust forms are reportable*

** Except when contained in an alloy

a Storage only (disposal code M10) indicates that the toxic chemical is sent off-site for storage because there is no known disposal method Amounts reported as transferred to storage only are included as a form of disposal (off-site release) See Box 1-5

b Beginning in reporting year 1997, transfers to solidification/stabilization of metals and metal compounds (waste treatment code M41) are reported separately from transfers to solidification/stabilization of non-metal TRI chemicals (waste treatment code M40) Because this treatment method prepares a metal for disposal, but does not destroy it, such transfers are included as a form of disposal (off-site release) See Box 1-6 Reports under code M40 of metals and metal compounds have been included in solidification/stabilization of metals and metal compounds in this report

c Beginning in reporting year 1997, transfers to wastewater treatment (excluding POTWs) of metals and metal compounds (waste treatment code M61) are reported separately from transfers to wastewater treatment of non-metal TRI chemicals (waste treatment code M60) Because wastewater treatment does not destroy metals, such transfers are included as a form of disposal (off-site release) See Box 1-6 Transfers of metals and metal compounds reported under code M60 have been included in transfers of metals and metal compounds to wastewater treatment

d Reported as discharges to POTWs in Section 6 1 of Form R EPA considers transfers of metals and metal compounds to POTWs as an off-site release because sewage treatment does not destroy the metal content of the waste material

e Unknown (disposal code M99) indicates that a facility is not aware of the type of waste management used for the toxic chemical that is sent off-site Amounts reported as unknown transfers are treated as a form of disposal (off-site release)

Table B-2: TRI Off-site Releases of Metals and Metal Compounds, Original and New Industries, 2000 *(continued)*

Chemical		Storage Only[a] Pounds	Solidification /Stabilization Metals Only[b] Pounds	Wastewater Treatment (Excluding POTWs) Metals Only[c] Pounds	Transfers to POTWs Metals Only[d] Pounds	Under-ground Injection Pounds	Landfills/ Disposal Surface Impound-ments Pounds	Land Treatment Pounds	Other Land Disposal Pounds	Other Off-site Management Pounds	Transfers to Waste Broker for Disposal Pounds	Unknown[e] Pounds	Off-site Releases: Transfers Off-site to Disposal Pounds
Manganese and manganese compounds	O	96,240	14,916,905	2,781,781	643,792	14,919	38,474,129	319,472	1,942,140	3,214,175	590,502	72,796	63,066,851
	N	78,835	593,839	1,045	2,191	10,000	5,969,560	188,459	1,139,223	541,349	72,207	5,149	8,601,857
Mercury and mercury compounds	O	7,670	74,775	32	225	1	37,917	17	287	1,237	14,099	526	136,786
	N	2,453	354,308	6,762	98	51	371,920	499	1,676	5,874	3,230	14,817	761,688
Nickel and nickel compounds	O	118,219	2,083,758	357,213	185,180	175,770	8,469,672	14,465	268,483	230,108	579,362	131,345	12,613,575
	N	72,042	847,350	39,910	4,477	31,850	8,024,594	50,838	197,541	129,564	27,040	36,687	9,461,893
Selenium and selenium compounds	O	0	86,408	13,869	603	192	70,776	5	1,238	972	5	2,350	176,418
	N	0	391,092	85	0	505	1,272,037	0	17,868	645	213	39	1,682,484
Silver and silver compounds	O	6,730	3,136	429	4,936	0	12,342	0	540	618	10,891	3,403	43,025
	N	0	145,567	0	0	0	152,800	0	0	1,360	1,789	10	301,526
Thallium and thallium compounds	O	0	37,575	32	0	0	243,703	0	0	50	0	0	281,360
	N	0	371,698	0	0	0	469,315	0	250	50,735	81	0	892,079
Vanadium** and vanadium compounds	O	4,813	162,877	35,999	10,333	100	1,422,790	3,556	43,661	50,854	230	10,646	1,745,859
	N	230,851	156,103	510	29	10,000	3,803,532	71,338	692,176	1,000,084	94,551	96	6,059,270
Zinc* and zinc compounds	O	388,905	96,107,127	1,150,129	548,941	2,970,651	110,617,665	72,806	2,097,325	1,115,290	2,898,875	438,115	218,405,829
	N	22,200	1,011,592	90,438	6,198	57,000	9,330,255	60,716	629,510	397,199	16,358	66,568	11,688,034
Total	O	**4,401,940**	**142,407,030**	**6,729,963**	**3,153,650**	**4,499,949**	**219,587,344**	**583,558**	**7,548,867**	**6,429,914**	**9,481,293**	**2,913,870**	**407,737,377**
	N	**634,646**	**10,606,480**	**374,625**	**40,549**	**225,856**	**77,197,407**	**881,475**	**11,618,622**	**9,366,226**	**1,330,218**	**396,600**	**112,672,704**

Note: Off-site Releases are from Section 6 (transfers off-site to disposal of Form R

O Original industries **N** New Industries

* Only fume or dust forms are reportable

** Except when contained in an alloy

a Storage only (disposal code M10) indicates that the toxic chemical is sent off-site for storage because there is no known disposal method Amounts reported as transferred to storage only are included as a form of disposal (off-site release) See Box 1-5

b Beginning in reporting year 1997, transfers to solidification/stabilization of metals and metal compounds (waste treatment code M41) are reported separately from transfers to solidification/stabilization of non-metal TRI chemicals (waste treatment code M40) Because this treatment method prepares a metal for disposal, but does not destroy it, such transfers are included as a form of disposal (off-site release) See Box 1-6 Reports under code M40 of metals and metal compounds have been included in solidification/stabilization of metals and metal compounds in this report

c Beginning in reporting year 1997, transfers to wastewater treatment (excluding POTWs) of metals and metal compounds (waste treatment code M61) are reported separately from transfers to wastewater treatment of non-metal TRI chemicals (waste treatment code M60) Because wastewater treatment does not destroy metals, such transfers are included as a form of disposal (off-site release) See Box 1-6 Transfers of metals and metal compounds reported under code M60 have been included in transfers of metals and metal compounds to wastewater treatment

d Reported as discharges to POTWs in Section 6 1 of Form R EPA considers transfers of metals and metal compounds to POTWs as an off-site release because sewage treatment does not destroy the metal content of the waste material

e Unknown (disposal code M99) indicates that a facility is not aware of the type of waste management used for the toxic chemical that is sent off-site Amounts reported as unknown transfers are treated as a form of disposal (off-site release)

Table B-3: Quantities of TRI Metals and Metal Compounds in Waste, Original and New Industries, 2000

Chemical		Recycled		Energy Recovery		Treated		Quantity Released On-and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
		On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
Aluminum* (CAS Number 7429-90-5)	O	17,261,315	20,059,822	0	3,954	23,384,277	609,566	14,973,309	76,292,242	0
	N	0	0	0	0	185,900	1,512	8,564,225	8,751,637	0
Antimony and antimony compounds	O	8,528,567	6 183 023	0	17 821	481 154	339,384	4,201 666	19 751,615	58,147
	N	11,200	32,176	0	0	54 209	79,614	24 883,895	25,061,094	130,000
Arsenic and arsenic compounds	O	4,758,855	532,778	0	0	82,959	331,095	7,460,593	13,166,280	1,114,111
	N	142,700	9,965	0	0	0	113	464,891,093	465,043,871	2,237,800
Barium and barium compounds	O	35 980,449	3,694,729	57 134	11,818	5,002 081	1 871,505	15,424,120	62 041,836	50,983
	N	79,000	3,757 264	0	0	604,204	180,749	295,014,740	299,635,957	2,139,304
Beryllium and beryllium compounds	O	622,263	100,605	0	0	9	1,805	110,017	834,699	40
	N	9,709	0	0	0	0	0	844,699	854,408	0
Cadmium and cadmium compounds	O	3,292,444	945 990	0	0	34 068	125 272	2,802,446	7,200 220	28,937
	N	67,228	25 125	0	0	69,970	201,171	6,786 294	7,149,788	51,000
Chromium and chromium compounds	O	43,478,407	118,450,495	383,399	22,294	10,814,385	1,674,315	39,336,481	214,159,777	320,333
	N	172,697	1,226,944	0	12,000	278,967	689,746	106,328,683	108,709,037	19,022,846
Cobalt and cobalt compounds	O	6,048,100	9,936 398	0	6,203	1 648 799	38,612	1 371,605	19,049,718	103
	N	117,640	9 086	0	0	0	0	15,653 043	15,779,769	575
Copper and copper compounds	O	852,080,916	813,692,366	49,383	212,089	1,125,161	5,847,132	61,366,936	1,734,373,983	24,264,481
	N	4,681,195	5,257,729	0	0	174,958	104,344	1,168,847,955	1,179,066,181	141,537,702
Lead and lead compounds	O	642,730,075	281,412 059	13,815	6,375	3 161 142	4,277,430	44 408,101	976,008 998	2 376,487
	N	517 702	2,611 654	0	0	437,563	863,038	318,651 908	323,081,865	17,000 057
Manganese and manganese compounds	O	85,886,066	116,660,397	776	51,661	3,700,722	1,704,623	137,377,595	345,381,839	162,487
	N	619,231	905,570	0	0	83,513	78,990	352,817,848	354,505,152	20,211,092
Mercury and mercury compounds	O	586,765	60,060	78	88	792	3 559	195,062	846 404	11,544
	N	60,175	101 870	0	38	18 977	2,305	3,846 096	4,029,460	6 600
Nickel and nickel compounds	O	46,488,196	108,892,505	113,593	28,222	2,336,264	1,293,775	14,711,098	173,863,653	1,249,632
	N	927,323	1,799,696	0	0	125,053	311,071	61,439,367	64,602,510	2,203,011
Selenium and selenium compounds	O	604 363	32,588	0	0	498	86 533	488,924	1,212,906	29 106
	N	25,100	21,076	0	0	0	71,700	8 753,708	8,871 584	290,000
Silver and silver compounds	O	1,909,135	1,864,056	0	0	3,530	36,696	314,418	4,127,834	21,812
	N	280	13,589	0	0	0	3,681	4,159,817	4,177,367	240,000
Thallium and thallium compounds	O	221,400	8 700	0	0	0	58	452 946	683,104	4 300
	N	1 810	5	0	0	0	0	4,144 573	4,146,388	54 000
Vanadium** and vanadium compounds	O	1,463,848	3,493,326	8	0	46,762	71,566	10,604,209	15,679,719	51,967
	N	23,547	95,727	0	0	119,364	91	73,173,815	73,412,544	3,270,529
Zinc* and zinc compounds	O	89 060 245	341,016 512	144 790	300,741	11 265 400	11 839 554	317,614 793	771 242 035	4,426 365
	N	18,209,903	1,103 790	0	68 740	190 074	65 255	764 198,931	783,836 693	15 153,718
Total	**O**	**1,841,001,408**	**1,827,036,409**	**762,976**	**661,266**	**63,088,002**	**30,152,481**	**673,214,318**	**4,435,916,861**	**34,170,834**
	N	**25,666,440**	**16,971,266**	**0**	**80,778**	**2,342,752**	**2,653,380**	**3,683,000,690**	**3,730,715,305**	**223,548,234**

Note: Data are from Section 8 of Form R

O Original industries **N** New Industries

* *Only fume or dust forms are reportable*

** Except when contained in an alloy

Appendix C

Basis of OSHA Carcinogen Listing for Individual Chemicals

Appendix C

Basis of OSHA Carcinogen Listing for Individual Chemicals

Under Section 313, a chemical does not have to be counted towards threshold determinations and release and other waste management calculations if it is present in a mixture below a certain concentration. This is known as the section 313 *"de minimus"* concentration in mixture. When the section 313 rule was developed, EPA adopted the *de minimus* percentages from the Occupational Safety and Health Administration's (OSHA) Hazard Communication Standards (29 CFR 1910.1900) because much of the information that industry would have relating to chemicals in mixtures would most likely be from the material safety data sheet (MSDS) on that mixture. The OSHA *de minimus* limitation is 0.1 percent if the chemical is a known or suspect carcinogen by virtue of appearing in one of three sources:

1. National Toxicology Program (NTP), "Annual Report on Carcinogens" (Latest Editions);

2. International Agency for Research on Cancer (IARC) "Monographs" (Latest Editions);

3. 29 CFR 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration.

The *de minimus* limitation is 1.0 percent for chemicals that do not meet the above OSHA carcinogen criteria. The carcinogen designation in the list of chemicals relates to any chemical that the Agency determined met the above OSHA criteria for the 0.1 percent *de minimus* limitation. Certain metal compound categories have two *de minimus* limitations. For example, hexavalent chromium compounds and inorganic arsenic compounds meet the OSHA carcinogen criteria, while trivalent chromium compounds and organic arsenic do not meet the OSHA criteria. In addition, there are no *de minimus* levels for persistent bioaccumulative toxic (PBT) chemicals, except for supplier notification purposes. See Chapter 3 for more information on PBT chemicals.

Table C-1 shows the specific bases for which the individual chemical was designated as a known or suspect carcinogen. This list was updated for the *2000 TRI Public Data Release*, based on a review of the most current NTP, IARC, and OSHA sources.

Table C-1: Basis of OSHA Carcinogen Listing for Individual Chemicals

Chemical	IARC	NTP	OSHA-Z	Chemical	IARC	NTP	OSHA-Z
Acetaldehyde	2B	P	–	C.I. Direct Black 38	2A	K	–
Acetamide	2B	–	–	C.I. Direct Blue 6	2A	K	–
2-Acetylaminofluorene	–	P	Z	C.I. Direct Brown 95	2A	–	–
Acrylamide	2A	P	–	C.I. Food Red 5	2B	–	–
Acrylonitrile	2B	P	Z	C.I. Solvent Yellow 3 (o-aminoazotoluene)	2B	P	–
2-Aminoanthraquinone	–	P	–	C.I. Solvent Yellow 34 (Auramine)	2B	–	
4-Aminoazobenzene	2B	–	–	Cobalt and cobalt compounds	2B	–	–
4-Aminobiphenyl	1	K	Z	Creosote	2A	K	–
1-Amino-2-methylanthraquinone	–	P	–	p-Cresidine	2B	P	–
Amitrole	–	P	–	Cupferron		–	P –
o-Anisidine	2B	–	–	2,4-D***	2B	–	–
o-Anisidine hydrochloride	–	P	–	2,4-D butoxyethyl ester***	2B	–	–
Arsenic and inorganic arsenic compounds	1	K*	Z	2,4-D butyl ester***	2B	–	–
Asbestos (friable)	1	K	Z	2,4-D chlorocrotyl ester***	2B	–	–
Benzene	1	K	Z	2,4-D 2-ethylhexyl ester***	2B	–	–
Benzidine	1	K	Z	2,4-D 2-ethyl-4-methylpentyl ester***	2B	–	–
Benzoic trichloride	2B	P	–	2,4-Diaminoanisole	2B	–	–
Beryllium and beryllium compounds	1	P*	–	2,4-Diaminoanisole sulfate		P	
Bis(chloromethyl)ether	1	K	Z	4,4'-Diaminodiphenyl ether	2B	–	–
1,3-Butadiene	2A	K	–	2,4-Diaminotoluene	2B	P	–
1,2-Butylene oxide	2B	–	–	Diaminotoluene (mixed isomers)	2B	P	–
Cadmium and cadmium compounds	1	K*	–	1,2-Dibromo-3-chloropropane	2B	P	Z
Carbon tetrachloride	2B	P	–	1,2-Dibromoethane	2A	P	–
Catechol	2B	–	–	1,4-Dichlorobenzene	2B	P	–
Chlordane	2B	–	–	Dichlorobenzene (mixed isomers)	2B	P	–
Chlorendic acid	2B	P	–	3,3'-Dichlorobenzidine	2B	P	Z
p-Chloroaniline	2B	–	–	3,3'-Dichlorobenzidine dihydrochloride	2B	P	–
Chloroform	2B	P	–	3,3'-Dichlorobenzidine sulfate	2B	P	–
Chloromethyl methyl ether	1	K	Z	Dichlorobromomethane	2B	P	–
3-Chloro-2-methyl-1-propene	–	P	–	1,2-Dichloroethane	2B	P	–
Chlorophenols	2B	–	–	Dichloromethane	2B	P	–
Chloroprene**	2B	P	–	trans-1,3-Dichloropropene	2B		–
Chlorothalonil	2B	–	–	1,3-Dichloropropylene	2B	P	–
p-Chloro-o-toluidine	2A	P	–	Dichlorvos	2B	–	–
Chromium (VI) compounds	1	K	–	Diepoxybutane	2B	P	–
C.I. Acid Red 114	2B	–		Di-(2-ethylhexyl)phthalate	–	P	–

Note: The list of TRI chemicals meeting the OSHA carcinogen standard and, therefore, not reported when in a mixture at a concentration level below the de minimus level of 0.1% has been updated, and this list reflects the update

IARC 1–The chemical is carcinogenic to humans, 2A–The chemical is probably carcinogenic to humans, 2B–The chemical is possibly carcinogenic to humans

NTP K–The chemical is known to be carcinogenic, P–The chemical may reasonably be anticipated to be carcinogenic

OSHA Z–The chemical appears at 29 CFR part 1910 Subpart Z

* Certain compounds
** NTP classification meets OSHA carcinogen criteria (effective for the 2001 reporting year)
*** Chlorophenoxy herbicides (IARC 2B)
**** IARC classification meets OSHA carcinogen criteria (effective for the 2001 reporting year)

Table C-1: Basis of OSHA Carcinogen Listing for Individual Chemicals

Chemical	IARC	NTP	OSHA-Z	Chemical	IARC	NTP	OSHA-Z
Diethyl sulfate	2A	P	–	Hydrazine sulfate	–	P	–
Diglycidyl resorcinol ether	2B	P	–	Lead and inorganic lead compounds	2B	–	Z
Dihydrosafrole	2B	–	–	Lindane	2B	P	–
3,3'-Dimethoxybenzidine	2B	P	–	Mecoprop***	2B	–	–
3,3'-Dimethoxybenzidine dihydrochloride	2B	P	–	Methoxone***	2B	–	–
3,3'-Dimethoxybenzidine hydrochloride	2B	P	-	Methoxone sodium salt***	2B	–	–
4-Dimethylaminoazobenzene	2B	P	Z	4,4-Methylenebis (2-chloroaniline)	2A	P	–
3,3'-Dimethylbenzidine	2B	P		4,4'-Methylenebis (N,N-dimethyl) benzeneamine	2B	P	–
3,3'-Dimethylbenzidine dihydrochloride	2B	P	–	4,4'-Methylenedianiline	2B	P	Z
3,3'-Dimethylbenzidine dihydrofluoride	2B	P	-	Michler's ketone	–	P	–
Dimethylcarbamyl chloride	2A	P	–	Mustard gas	1	K	–
1,1-Dimethylhydrazine	2B	P	–	alpha-Naphthylamine	–	–	Z
Dimethyl sulfate	2A	P	–	beta-Naphthylamine	1	K	Z
2,4-Dinitrotoluene	2B	–	–	Nickel	2B	P	–
2,6-Dinitrotoluene	2B	–	–	Nickel compounds	1	P*	–
1,4-Dioxane	2B	P	–	Nitrilotriacetic acid	–	P	–
1,2-Diphenylhydrazine	–	P	–	Nitrobenzene	2B	–	–
2,4-D isopropyl ester***	2B	–	–	4-Nitrobiphenyl	–	–	Z
2,4-DP***	2B	–	–	Nitrofen	2B	P	–
2,4-D propylene glycol butyl ether ester***	2B	–	-	Nitrogen mustard	2A	–	–
2,4-D sodium salt***	2B	–	–	2-Nitropropane	2B	P	–
Epichlorohydrin	2A	P	–	N-Nitrosodi-n-butylamine	2B	P	–
Ethyl acrylate	2B	–	–	N-Nitrosodiethylamine	2A	P	–
Ethyl benzene****	2B	–	–	N-Nitrosodimethylamine	2A	P	Z
Ethyleneimine	–	–	Z	N-Nitrosodi-n-propylamine	2B	P	–
Ethylene oxide	1	K	Z	N-Nitroso-N-ethylurea	2A	P	–
Ethylene thiourea	–	P	–	N-Nitroso-N-methylurea	2A	P	–
Formaldehyde	2A	P	Z	N-Nitrosomethylvinylamine	2B	P	–
Heptachlor	2B	–	–	N-Nitrosomorpholine	2B	P	–
Hexachlorobenzene	2B	P	-	N-Nitrosonornicotine	2B	P	–
alpha-Hexachlorocyclohexane	2B	P	–	N-Nitrosopiperidine	2B	P	–
Hexachloroethane	2B	P	–	Pentachlorophenol	2B	–	–
Hexamethylphosphoramide	2B	P	–	Phenytoin	2B	P	–
Hydrazine	2B	P	–	Polybrominated biphenyls (PBBs)	2B	P	–

Note: The list of TRI chemicals meeting the OSHA carcinogen standard and, therefore, not reported when in a mixture at a concentration level below the de minimus level of 0 1% has been updated, and this list reflects the update

IARC 1–The chemical is carcinogenic to humans, 2A–The chemical is probably carcinogenic to humans, 2B–The chemical is possibly carcinogenic to humans

NTP K–The chemical is known to be carcinogenic, P–The chemical may reasonably be anticipated to be carcinogenic

OSHA Z–The chemical appears at 29 CFR part 1910 Subpart Z

* Certain compounds
** NTP classification meets OSHA carcinogen criteria (effective for the 2001 reporting year)
*** Chlorophenoxy herbicides (IARC 2B)
**** IARC classification meets OSHA carcinogen criteria (effective for the 2001 reporting year)

Table C-1: Basis of OSHA Carcinogen Listing for Individual Chemicals

Chemical	IARC	NTP	OSHA-Z
Polychlorinated alkanes (C12, 60% chlorinated)	–	P	–
Polychlorinated biphenyls (PCBs)	2A	P	–
Polycyclic aromatic compounds (PACs):			
Benz(a)anthracene	2A	P	–
Benzo(b)fluoranthene	2B	P	–
Benzo(j)fluoranthene	2B	P	–
Benzo(k)fluoranthene	2B	P	–
Benzo(rst)pentaphene	2B	–	–
Benzo(a)pyrene	2A	P	–
Dibenz(a,h)acridine	2A	P	–
Dibenz(a,j)acridine	2B	P	–
Dibenzo(a,h)anthracene	2B	P	–
7H–Dibenzo(c,g)carbazole	2B	P	–
Dibenzo(a,e)pyrene	2B	P	–
Dibenzo(a,h)pyrene	2B	P	–
Dibenzo(a,l)pyrene	2B	P	–
7,12–Dimethylbenz(a)anthracene	2B	–	–
Indeno[1,2,3–cd]pyrene	2B	P	–
5–Methylchrysene	2B	P	–
1–Nitropyrene	2B	P	–
Potassium bromate	2B	–	–
Propane sultone	2B	P	–
beta-Propiolactone	2B	P	Z
Propyleneimine	2B	P	–
Propylene oxide	2B	P	–
Safrole	2B	P	–
Sodium o-phenylphenoxide	2B	–	–
Styrene	2B	–	–
Styrene oxide	2A	–	–
Tetrachloroethylene	2B	P	–
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1	K	–
Thioacetamide	2B	P	–
4,4'-Thiodianiline	2B	–	–
Thiourea	–	P	–
Toluene-2,4-diisocyanate	2B	P	–
Toluene-2,6-diisocyanate	2B	P	–
Toluene diisocyanate (mixed isomers)	2B	P	–
o-Toluidine	2A	P	–
o-Toluidine hydrochloride	–	P	–
Toxaphene	2B	P	–
Trichloroethylene	2A	P	–
2,4,6-Trichlorophenol	2B	P	–
1,2,3-Trichloropropane	2A	P	–
Tris(2,3-dibromopropyl)phosphate	2A	P	–
Trypan blue	2B	–	–
Urethane	2B	P	–
Vinyl acetate	2B	–	–
Vinyl bromide	2A	–	–
Vinyl chloride	1	K	Z
2,6-Xylidine	2B	–	–

Note: The list of TRI chemicals meeting the OSHA carcinogen standard and, therefore, not reported when in a mixture at a concentration level below the de minimus level of 0 1% has been updated, and this list reflects the update

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OSHA Z–The chemical appears at 29 CFR part 1910 Subpart Z

* Certain compounds
** NTP classification meets OSHA carcinogen criteria (effective for the 2001 reporting year).
*** Chlorophenoxy herbicides (IARC 2B)
**** IARC classification meets OSHA carcinogen criteria (effective for the 2001 reporting year)

Appendix D

Public Access to the Toxics Release Inventory and Related Information

Appendix D

Public Access to the Toxics Release Inventory and Related Information

EPA makes the Toxics Release Inventory (TRI) and other related information available to the public both electronically and in hard copy. Every year, EPA enhances its databases to make the data easier to access and search and expands its outreach activities to include new potential users of the data. In May 2002, EPA released a number of enhancements to the TRI Explorer that greatly increased the ability of users to access TRI data (http://www.epa.gov/triexplorer/whatsnew.htm). In addition to the TRI Explorer, the TRI data are available in a wide variety of computer and hard copy formats to meet most user's needs. TRI publications can be obtained from EPA. TRI data can also be accessed online at EPA's web site, http://www.epa.gov/tri/tridata/tri00/index.htm.

State officials also receive TRI reports from facilities in their jurisdiction, and many states publish reports highlighting state and local trends. Tables D–1 through D-3 highlight the products and services available from the above mentioned resources as well as several others.

TRI Document Distribution (TRI-DOCS) U.S. Environmental Protection Agency Attn: TRI Documents MC 2844T (EPA West, 5th Floor) 1200 Pennsylvania Ave., NW Washington, DC 20460 (202) 564-9554 tridocs@epa.gov	**TRI User Support Service (TRI-US)** U.S. Environmental Protection Agency Attn: TRI-USer Support MC 2844T (EPA West, 5th Floor) 1200 Pennsylvania Ave., NW Washington, DC 20460 (202) 566-0250 tri.us@epa.gov
U.S. EPA RCRA, Superfund & EPCRA Call Center (800) 424-9346 (703) 412-9810 TDD (800) 553-7672 TDD (703) 412-3323 http://www.epa.gov/epaoswer/hotline	**U.S. EPA TRI Website** http://www.epa.gov/tri http://www.epa.gov/tri/tridata/tri00/index.htm

Table D-1: Toxics Release Inventory Products

Data Product	Supplier	Order Information
2000 TRI Public Data Release Report The 2000 TRI Public Data Release Report is the TRI annual report that provides a general overview of the TRI data and information on trends. The State Fact Sheets are released with the Public Data Release Report and provide a brief summary of the TRI data by State. • 2000 TRI Executive Summary (reference EPA 260-S-02-001) • 2000 TRI Public Data Release Report (reference EPA 260-R-02-003) • 2000 State Fact Sheets Report (reference EPA 260-F-02-004)	**TRI Document Distribution (TRI-DOCS)** U.S. Environmental Protection Agency Attn: TRI Documents MC 2844T (EPA West, 5th Floor) 1200 Pennsylvania Ave., NW Washington, DC 20460 (202) 564-9554 tridocs@epa.gov	Free while supplies last.
	These documents can be viewed, printed, or downloaded from the Internet at http://www.epa.gov/tri/tridata/tri00/pdr/index.htm	
2000 State Data Files in Dbase format	**U.S. EPA Toxics Release Inventory (TRI) Website**	Download from the Internet at http://www.epa.gov/triinter/tridata/tri00/data/index.htm
Chemicals in Your Community (reference EPA 550-K-99-001) This pamphlet summarizes the information that the public can obtain under EPCRA and CAA, how to obtain such information, other information that may also be useful, and how to use these various sources of information to build a snapshot of chemicals stored and released in a community.	**U.S. EPA's National Service Center for Environmental Publications (NSCEP)** (800) 490-9198 (513) 489-8190 FAX: (513) 489-8695 Order on the Internet at http://www.epa.gov/ncepihom	Free
Chemical Fact Sheets EPA is continuing to develop Chemical Fact Sheets as part of its effort to provide the public with information on chemicals. Two types of summaries are available for each chemical. One is a two-page document providing a non-technical summary of chemical information. The other is a longer, referenced presentation of information that provides the basis for statements included in the shorter summary.	**TSCA Assistance Information Services Hotline** (202) 554-1404	Free
	The Chemical Fact Sheets can be downloaded from the Internet at http://www.epa.gov/opptintr/chemfact/	

Table D-2: Toxics Release Assistance Services

Assistance Service	Contact Information
TRI User Support Service (TRI-US) The TRI-US Service provides general information about the TRI and support for access to any of the data formats. TRI specialists can help determine the data product best suited for an individual user's needs.	**TRI User Support Service (TRI-US)** U.S. EPA Attn: TRI-USer Support MC 2844T (EPA West, 5th Floor) 1200 Pennsylvania Ave., NW Washington, DC 20460 (202) 260-1531 tri.us@epa.gov
U.S. EPA RCRA, Superfund & EPCRA Call Center U.S. EPA's RCRA, Superfund & EPCRA Call Center provides regulatory, policy, and technical assistance to the regulated community, federal agencies, local and state governments, the public, and other interested parties in response to questions related to RCRA, Superfund & EPCRA. For EPCRA, the Call Center provides information on the availability of documents related to EPCRA and copies of selected EPCRA documents on a limited basis. For more information about the Call Center, visit their Internet Web site at http://www.epa.gov/epaoswer/hotline	**U.S. EPA RCRA, Superfund & EPCRA Call Center** (800) 424-9346 (703) 412-9810 TDD: (800) 553-7672 TDD: (703) 412-3323

Table D-3: Toxics Release On-line Services

On-line Service	Web Address/Contact Information
U.S. Environmental Protection Agency (EPA)	
◆ EPA Home Page	http://www.epa.gov
◆ Toxics Release Inventory (TRI) Home Page	http://www.epa.gov/tri/
◆ TRI Explorer—EPA created the TRI Explorer to provide access to TRI data that is both easy to understand and flexible to use. The TRI Explorer will generate on- and off-site release reports for facilities, chemicals, geographic areas, or industry type (SIC code) at the county, state, and national level.	http://www.epa.gov/triexplorer/
◆ TRI 2000 Data Release Page—provides access to information relating to the 2000 TRI data release. It includes press materials, data summary information, questions and answers, and other information about 2000 TRI data.	http://www.epa.gov/tri/tridata/tri00
◆ EPA Envirofacts—provides access to TRI data. Provides user defined searches of the TRI database by facility name, geographic location, SIC Code, or chemical name and produces reports on the facilities and maps their locations. A variety of user specified parameters let users point and click to customize their searches.	http://www.epa.gov/enviro/html/toxic_releases.html
TOXNET®, the National Library of Medicine's (NLM) Toxicology Data Network, provides free access to TRI data. Users can search by chemical or other name, chemical name fragment, or Chemical Abstracts Service Registry Number. Also searchable are facility or parent company name, state, city, county, or zip code. Search results can be limited to releases greater than a specified number of pounds, and individual releases can be summed together to display a total amount.	http://toxnet.nlm.nih.gov/
Right-to-Know Network (RTK Net) is operated by two nonprofit organizations (OMB Watch and the Center for Public Data Access). RTK Net provides free access to TRI data and enables users to search by geographic area, facility, industry, parent company, or off-site waste transfer.	http://rtknet.org/
EPA's Integrated Risk Information System (IRIS) is an electronic database containing information on human health effects that may result from exposure to various chemicals in the environment. IRIS was initially developed for EPA staff in response to a growing demand for consistent information on chemical substances for use in risk assessments, decision-making and regulatory activities. The information in IRIS is intended for those without extensive training in toxicology, but with some knowledge of health sciences.	http://www.epa.gov/iris

Appendix E

EPA Regional Office and State TRI Contacts

EPA Regional Section 313 Coordinators

USEPA Region 1

Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
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(617) 918-1829
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USEPA Region 2

New Jersey, New York, Puerto Rico, Virgin Islands
Nora Lopez
USEPA Region 2 (MS-105)
2890 Woodbridge Ave., Bldg. 10
Edison, NJ 08837-3679
(732) 906-6890
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USEPA Region 3

Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia
William Reilly
USEPA Region 3 (3WC33)
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USEPA Region 4

Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee
Ezequiel Velez
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Stephen Wurtz
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USEPA Region 8

Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming
Joyel Dhieux
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Please note that several states/territories have two TRI contacts An asterisk (*) identifies the technical contact who provides assistance to industries on TRI reporting and receives the TRI reporting forms

USEPA Region 9

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USEPA Region 10

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USEPA Region 10 (WCM-128)
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State TRI Program Officials

Alabama

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Government Preparedness and Response Program
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Togipa Tausaga, Director
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Please note that several states/territories have two TRI contacts An asterisk (*) identifies the technical contact who provides assistance to industries on TRI reporting and receives the TRI reporting forms

Certified Mail ONLY:
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1835 South Donaghey
Conway, AR 72032

California
Coordinator
California Environmental Protection Agency
Office of Environmental Information Management
Attn: Toxics Release Inventory
P.O. Box 806
Sacramento, CA 95812-0806
(916) 324-3421
Fax: (916) 324-1788

Certified or Express Mail ONLY:
California Environmental Protection Agency
Office of Environmental Information Management
400 P Street
Sacramento, CA 95812
Attn: Toxics Release Inventory

Colorado
Kirk Mills/Margo Griffen
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(303) 692-2977/ (303) 692-2979
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Please note that several states/territories have two TRI contacts An asterisk (*) identifies the technical contact who provides assistance to industries on TRI reporting and receives the TRI reporting forms

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Right-to-Know
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acoulson@govmail.state.nv.us

Form R Package ONLY:
Alene Coulson
c/o State Emergency Response Commission
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Please note that several states/territories have two TRI contacts An asterisk (*) identifies the technical contact who provides assistance to industries on TRI reporting and receives the TRI reporting forms

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Appendix F
TRI Form R and Form A for 2000

Appendix F
TRI Form R and Form A for 2000

Facilities reporting to the Toxics Release Inventory (TRI) submit their information on TRI's Form R. If a facility's total annual reportable amount of a chemical does not exceed 500 pounds, and the facility does not manufacture, process, or otherwise use more than 1 million pounds of the chemical, it may submit a Form A certification statement. (Form A certification statement reporting is further explained in Chapter 1.) This appendix supplies copies of the Form R and Form A certification statement for the 2000 reporting year.

FORM R

The 2000 Form R is divided into two parts:

Part I, Facility Identification Information, contains information on such matters as name, address, parent company information, and contact names and phone numbers for the facility.

Part II, Chemical-Specific Information, contains information such as chemical identity, facility activities and uses of the chemical, amounts of on- and off-site releases and transfers off-site for further waste management, on-site waste treatment methods and efficiencies, on- and off-site waste management quantities, and information on source reduction and recycling activities.

FORM A Certification Statement

The 2000 Form A certification statement consists of facility identification information and chemical identification, as in Form R. Facilities do not report on the Form A certification statement amounts or other information about their uses, releases, or waste management of the chemical.

Readers who are interested in a more in depth understanding of who is required to report to TRI and how to fill out the forms, should refer to the RCRA, Superfund, EPCRA Call Center at (800) 424-9346, (703) 412-9810, TDD (800) 553-7672 or TDD (703) 412-3323. Reporting software, forms, and instructions for the current reporting year are available from EPA's Web site at http://www.epa.gov/triinter/report/index.htm.

(IMPORTANT Type or print, read instructions before completing form)

EPA
United States Environmental Protection Agency

FORM R

TOXIC CHEMICAL RELEASE INVENTORY REPORTING FORM

Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986, also known as Title III of the Superfund Amendments and Reauthorization Act

WHERE TO SEND COMPLETED FORMS: 1 EPCRA Reporting Center, P O Box 3348, Merrifield, VA 22116-3348, ATTN TOXIC CHEMICAL RELEASE INVENTORY
2 APPROPRIATE STATE OFFICE (See instructions in Appendix F)

Enter "X" here if this is a revision

For EPA use only

Important: See instructions to determine when "Not Applicable (NA)" boxes should be checked.

PART I. FACILITY IDENTIFICATION INFORMATION

SECTION 1. REPORTING YEAR _____

SECTION 2. TRADE SECRET INFORMATION

2.1	Are you claiming the toxic chemical identified on page 2 trade secret? ☐ Yes (Answer question 2.2, Attach substantiation forms) ☐ No (Do not answer 2 2, Go to Section 3)	**2.2**	Is this copy ☐ Sanitized ☐ Unsanitized (Answer only if "YES" in 2 1)

SECTION 3. CERTIFICATION (Important: Read and sign after completing all form sections.)

I hereby certify that I have reviewed the attached documents and that, to the best of my knowledge and belief, the submitted information is true and complete and that the amounts and values in this report are accurate based on reasonable estimates using data available to the preparers of this report

Name and official title of owner/operator or senior management official	Signature	Date Signed.

SECTION 4. FACILITY IDENTIFICATION

4.1		TRI Facility ID Number	
Facility or Establishment Name		Facility or Establishment Name or Mailing Address(if different from street address)	
Street		Mailing Address	
City/County/State/Zip Code		City/State/Zip Code	Country (Non-US)

4.2	This report contains information for (Important check a or b, check c or d if applicable)	a ☐ An entire facility	b ☐ Part of a facility	c ☐ A Federal facility	d ☐ GOCO		
4.3	Technical Contact Name				Telephone Number (include area code)		
4.4	Public Contact Name				Telephone Number (include area code)		
4.5	SIC Code (s) (4 digits)	Primary a.	b.	c.	d.	e.	f.

4.6	Latitude	Degrees	Minutes	Seconds	Longitude	Degrees	Minutes	Seconds

4.7	Dun & Bradstreet Number(s) (9 digits)	**4.8**	EPA Identification Number (RCRA I D No) (12 characters)	**4.9**	Facility NPDES Permit Number(s) (9 characters)	**4.10**	Underground Injection Well Code (UIC) I D. Number(s) (12 digits)
a.		a.		a.		a.	
b.		b.		b.		b.	

SECTION 5. PARENT COMPANY INFORMATION

5.1	Name of Parent Company	NA ☐	
5.2	Parent Company's Dun & Bradstreet Number	NA ☐	

EPA FORM R
PART II. CHEMICAL-SPECIFIC INFORMATION

TRI Facility ID Number

Toxic Chemical, Category or Generic Name

SECTION 1. TOXIC CHEMICAL IDENTITY (Important: DO NOT complete this section if you completed Section 2 below.)

1.1	CAS Number (Important: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category.)
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list.)
1.3	Generic Chemical Name (Important: Complete only if Part 1, Section 2.1 is checked "yes". Generic Name must be structurally descriptive.)

1.4 Distribution of Each Member of the Dioxin and Dioxin-like Compounds Category.
(If there are any numbers in boxes 1-17, then every field must be filled in with either 0 or some number between 0.01 and 100. Distribution should be reported in percentages and the total should equal 100%. If you do not have speciation data available, indicate NA.)

NA ☐	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

SECTION 2. MIXTURE COMPONENT IDENTITY (Important: DO NOT complete this section if you completed Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important: Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)

SECTION 3. ACTIVITIES AND USES OF THE TOXIC CHEMICAL AT THE FACILITY
(Important: Check all that apply.)

3.1 Manufacture the toxic chemical:	3.2 Process the toxic chemical:	3.3 Otherwise use the toxic chemical:
a. ☐ Produce b. ☐ Import		
If produce or import:	a. ☐ As a reactant	a. ☐ As a chemical processing aid
c. ☐ For on-site use/processing	b. ☐ As a formulation component	b. ☐ As a manufacturing aid
d. ☐ For sale/distribution	c. ☐ As an article component	c. ☐ Ancillary or other use
e. ☐ As a byproduct	d. ☐ Repackaging	
f. ☐ As an impurity	e. ☐ As an impurity	

SECTION 4. MAXIMUM AMOUNT OF THE TOXIC CHEMICAL ONSITE AT ANY TIME DURING THE CALENDAR YEAR

4.1	☐ (Enter two-digit code from instruction package.)	

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM ONSITE

			A. Total Release (pounds/year*) (Enter range code or estimate**)	B. Basis of Estimate (enter code)	C. % From Stormwater
5.1	Fugitive or non-point air emissions	NA ☐			
5.2	Stack or point air emissions	NA ☐			
5.3	Discharges to receiving streams or water bodies (enter one name per box)				
	Stream or Water Body Name				
5.3.1					
5.3.2					
5.3.3					

If additional pages of Part II, Section 5.3 are attached, indicate the total number of pages in this box ☐ and indicate the Part II, Section 5.3 page number in this box. ☐ (example: 1,2,3, etc.)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A= 1 - 10 pounds, B= 11- 499 pounds; C= 500 - 999 pounds.

EPA FORM R
PART II. CHEMICAL - SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number
Toxic Chemical, Category or Generic Name

SECTION 5. QUANTITY OF THE TOXIC CHEMICAL ENTERING EACH ENVIRONMENTAL MEDIUM ONSITE (Continued)

		NA	A. Total Release (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)
5.4.1	Underground Injection onsite to Class I Wells	☐		
5.4.2	Underground Injection onsite to Class II-V Wells	☐		
5.5	Disposal to land onsite			
5.5.1A	RCRA Subtitle C landfills	☐		
5.5.1B	Other landfills	☐		
5.5.2	Land treatment/application farming	☐		
5.5.3	Surface Impoundment	☐		
5.5.4	Other disposal	☐		

SECTION 6. TRANSFERS OF THE TOXIC CHEMICAL IN WASTES TO OFF-SITE LOCATIONS

6.1 DISCHARGES TO PUBLICLY OWNED TREATMENT WORKS (POTWs)

6.1.A Total Quantity Transferred to POTWs and Basis of Estimate

6.1.A.1. Total Transfers (pounds/year*) (enter range code** or estimate)	6.1.A.2 Basis of Estimate (enter code)

6.1.B.__ POTW Name							
POTW Address							
City		State		County		Zip	
6.1.B.__ POTW Name							
POTW Address							
City		State		County		Zip	

If additional pages of Part II, Section 6.1 are attached, indicate the total number of pages in this box ☐ and indicate the Part II, Section 6.1 page number in this box ☐ (example: 1,2,3, etc.)

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS

6.2. ___ Off-Site EPA Identification Number (RCRA ID No.)									
Off-Site Location Name									
Off-Site Address									
City		State		County		Zip		Country (Non-US)	

Is location under control of reporting facility or parent company? ☐ Yes ☐ No

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes A = 1 - 10 pounds, B = 11 - 499 pounds; C = 500 - 999 pounds.

EPA FORM R

PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number

Toxic Chemical, Category or Generic Name

SECTION 6.2 TRANSFERS TO OTHER OFF-SITE LOCATIONS (Continued)

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1. M
2.	2.	2. M
3.	3.	3. M
4.	4.	4. M

6.2. ___ Off-Site EPA Identification Number (RCRA ID No.)

Off-Site location Name

Off-Site Address

City | State | County | Zip | Country (Non-US)

Is location under control of reporting facility or parent company? ☐ Yes ☐ No

A. Total Transfers (pounds/year*) (enter range code** or estimate)	B. Basis of Estimate (enter code)	C. Type of Waste Treatment/Disposal/ Recycling/Energy Recovery (enter code)
1.	1.	1. M
2.	2.	2. M
3.	3.	3. M
4.	4.	4. M

SECTION 7A. ON-SITE WASTE TREATMENT METHODS AND EFFICIENCY

☐ Not Applicable (NA) - Check here if no on-site waste treatment is applied to any waste stream containing the toxic chemical or chemical category

a. General Waste Stream (enter code)	b Waste Treatment Method(s) Sequence [enter 3-character code(s)]	c Range of Influent Concentration	d Waste Treatment Efficiency Estimate	e Based on Operating Data ?
7A.1a	7A. 1b: 1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ 7 ___ 8 ___	7A. 1c	7A. 1d %	7A. 1e Yes ☐ No ☐
7A.2a	7A. 2b: 1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ 7 ___ 8 ___	7A. 2c	7A. 2d %	7A. 2e Yes ☐ No ☐
7A.3a	7A. 3b: 1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ 7 ___ 8 ___	7A. 3c	7A. 3d %	7A. 3e Yes ☐ No ☐
7A.4a	7A. 4b: 1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ 7 ___ 8 ___	7A. 4c	7A. 4d %	7A. 4e Yes ☐ No ☐
7A.5a	7A. 5b: 1 ___ 2 ___ 3 ___ 4 ___ 5 ___ 6 ___ 7 ___ 8 ___	7A. 5c	7A. 5d %	7A. 5e Yes ☐ No ☐

If additional pages of Part II, Section 6.2/7A are attached, indicate the total number of pages in this box ☐ and indicate the Part II, Section 6.2/7A page number in this box : ☐ (example: 1,2,3, etc)

* For Dioxin or Dioxin-like compounds, report in grams/year

** Range Codes: A = 1 - 10 pounds, B = 11 - 499 pounds, C = 500 - 999 pounds.

EPA FORM R
PART II. CHEMICAL-SPECIFIC INFORMATION (CONTINUED)

TRI Facility ID Number
Toxic Chemical, Category or Generic Name

SECTION 7B. ON-SITE ENERGY RECOVERY PROCESSES

☐ Not Applicable (NA) - Check here if no on-site energy recovery is applied to any waste stream containing the toxic chemical or chemical category

Energy Recovery Methods [enter 3-character code(s)]

1 ☐ 2 ☐ 3 ☐ 4 ☐

SECTION 7C. ON-SITE RECYCLING PROCESSES

☐ Not Applicable (NA) - Check here if no on-site recycling is applied to any waste stream containing the toxic chemical or chemical category.

Recycling Methods [enter 3-character code(s)]

1. ☐ 2. ☐ 3. ☐ 4. ☐ 5. ☐

6. ☐ 7. ☐ 8. ☐ 9. ☐ 10. ☐

SECTION 8. SOURCE REDUCTION AND RECYCLING ACTIVITIES

		Column A Prior Year (pounds/year*)	Column B Current Reporting Year (pounds/year*)	Column C Following Year (pounds/year*)	Column D Second Following Year (pounds/year*)
8.1	Quantity released ***				
8.2	Quantity used for energy recovery onsite				
8.3	Quantity used for energy recovery offsite				
8.4	Quantity recycled onsite				
8.5	Quantity recycled offsite				
8.6	Quantity treated onsite				
8.7	Quantity treated offsite				
8.8	Quantity released to the environment as a result of remedial actions, catastrophic events, or one-time events not associated with production processes (pounds/year)				
8.9	Production ratio or activity index				

8.10	Did your facility engage in any source reduction activities for this chemical during the reporting year? If not, enter "NA" in Section 8.10.1 and answer Section 8.11			
	Source Reduction Activities [enter code(s)]	Methods to Identify Activity (enter codes)		
8.10.1		a.	b.	c.
8.10.2		a.	b.	c.
8.10.3		a.	b.	c.
8.10.4		a.	b.	c.
8.11	Is additional information on source reduction, recycling, or pollution control activities included with this report ? (Check one box)			YES ☐ NO ☐

* For Dioxin or Dioxin-like compounds, report in grams/year

*** Report releases pursuant to EPCRA Section 329(8) including "any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment." Do not include any quantity treated onsite

United States Environmental Protection Agency

TOXIC CHEMICAL RELEASE INVENTORY
FORM A

WHERE TO SEND COMPLETED FORMS: 1 EPCRA Reporting Center, P.O Box 3348, Merrifield, VA 22116-3348, ATTN: TOXIC CHEMICAL RELEASE INVENTORY; 2. APPROPRIATE STATE OFFICE (See instructions in Appendix F)

Enter "X" here if this is a revision

For EPA use only

Important: See instructions to determine when "Not Applicable (NA)" boxes should be checked.

PART I. FACILITY IDENTIFICATION INFORMATION

SECTION 1. REPORTING YEAR _____

SECTION 2. TRADE SECRET INFORMATION

2.1	Are you claiming the toxic chemical identified on page 2 trade secret? ☐ Yes (Answer question 2 2; Attach substantiation forms) ☐ No (Do not answer 2 2, Go to Section 3)	2.2	Is this copy ☐ Sanitized ☐ Unsanitized (Answer only if "YES" in 2.1)

SECTION 3. CERTIFICATION (Important: Read and sign after completing all form sections.)

I hereby certify that to the best of my knowledge and belief, for each toxic chemical listed in the statement, the annual reportable amount as defined in 40 CFR 372 27 (a), did not exceed 500 pounds for this reporting year and that the chemical was manufactured, processed, or otherwise used in an amount not exceeding 1 million pounds during this reporting year

Name and official title of owner/operator or senior management official:	Signature.	Date Signed

SECTION 4. FACILITY IDENTIFICATION

4.1		TRI Facility ID Number	
Facility or Establishment Name		Facility or Establishment Name or Mailing Address(if different from street address)	
Street		Mailing Address	
City/County/State/Zip Code		City/State/Zip Code	Country (Non-US)

4.2	This report contains information for (Important · check c or d if applicable)	c ☐ A Federal facility	d. ☐ GOCO		
4.3	Technical Contact Name		Telephone Number (include area code)		
4.4	Intentionally left blank				

4.5	SIC Code (s) (4 digits)	Primary a.	b.	c.	d.	e.	f.

4.6	Latitude	Degrees	Minutes	Seconds	Longitude	Degrees	Minutes	Seconds

4.7	Dun & Bradstreet Number(s) (9 digits)	4.8	EPA Identification Number (RCRA I D No) (12 characters)	4.9	Facility NPDES Permit Number(s) (9 characters)	4.10	Underground Injection Well Code (UIC) I.D. Number(s) (12 digits)
a.		a.		a.		a.	
b.		b.		b.		b.	

SECTION 5. PARENT COMPANY INFORMATION

5.1	Name of Parent Company	NA ☐	
5.2	Parent Company's Dun & Bradstreet Number	NA ☐	

IMPORTANT: Type or print, read instructions before completing form

EPA FORM A

PART II. CHEMICAL IDENTIFICATION TRIFID:

Do not use this form for reporting PBT chemicals including Dioxin and Dioxin-like Compounds*

SECTION 1. TOXIC CHEMICAL IDENTITY Report ___ of ___

1.1	CAS Number (Important: Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category)
1.2	Toxic Chemical or Chemical Category Name (Important Enter only one name exactly as it appears on the Section 313 list)
1.3	Generic Chemical Name (Important Complete only if Part 1, Section 2 1 is checked "yes" Generic Name must be structurally descriptive)

SECTION 2. MIXTURE COMPONENT IDENTITY (Important: DO NOT complete this section if you completed Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important Maximum of 70 characters, including numbers, letters, spaces, and punctuation)

SECTION 1. TOXIC CHEMICAL IDENTITY Report ___ of ___

1.1	CAS Number (Important Enter only one number exactly as it appears on the Section 313 list Enter category code if reporting a chemical category)
1.2	Toxic Chemical or Chemical Category Name (Important: Enter only one name exactly as it appears on the Section 313 list)
1.3	Generic Chemical Name (Important Complete only if Part 1, Section 2 1 is checked "yes" Generic Name must be structurally descriptive)

SECTION 2. MIXTURE COMPONENT IDENTITY (Important: DO NOT complete this section if you completed Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)

SECTION 1. TOXIC CHEMICAL IDENTITY Report ___ of ___

1.1	CAS Number (Important. Enter only one number exactly as it appears on the Section 313 list Enter category code if reporting a chemical category)
1.2	Toxic Chemical or Chemical Category Name (Important Enter only one name exactly as it appears on the Section 313 list)
1.3	Generic Chemical Name (Important Complete only if Part 1, Section 2 1 is checked "yes" Generic Name must be structurally descriptive)

SECTION 2. MIXTURE COMPONENT IDENTITY (Important: DO NOT complete this section if you completed Section 1 above.)

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SECTION 1. TOXIC CHEMICAL IDENTITY Report ___ of ___

1.1	CAS Number (Important Enter only one number exactly as it appears on the Section 313 list. Enter category code if reporting a chemical category)
1.2	Toxic Chemical or Chemical Category Name (Important Enter only one name exactly as it appears on the Section 313 list)
1.3	Generic Chemical Name (Important Complete only if Part 1, Section 2 1 is checked "yes" Generic Name must be structurally descriptive.)

SECTION 2. MIXTURE COMPONENT IDENTITY (Important: DO NOT complete this section if you completed Section 1 above.)

2.1	Generic Chemical Name Provided by Supplier (Important. Maximum of 70 characters, including numbers, letters, spaces, and punctuation.)

* See the TRI Reporting Forms and Instructions Manual for the list of PBT Chemicals (including Dioxin and Dioxin-like Compounds)

(Make additional copies of this page, if needed)