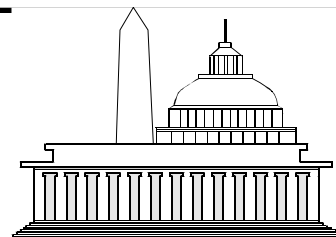

Chapter 10



Toxics Release Inventory Data for Federal Facilities

A Look at the Federal Facilities Reporting to TRI

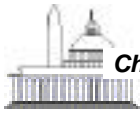
Facilities owned and operated by Federal agencies are required to report to TRI, regardless of Standard Industrial Classification (SIC) code. In 1993, President Clinton signed Executive Order 12856, which mandated that Federal facilities report to TRI starting with the 1994 reporting year. The Executive Order also directs each Federal agency to achieve an agency-wide reduction of 50% in on-site releases and off-site transfers to treatment and disposal by 1999, based on their 1994 TRI reporting. It encourages Federal facilities to use source reduction wherever practicable to achieve their reductions.

Box 10-1 lists the Federal agencies that have facilities reporting to TRI. Because the Department of Defense has the most facilities and dominates the TRI reporting by Federal facilities, this chapter considers the facilities reporting in each defense agency as a separate entity.

While most Federal facilities began reporting to TRI for the 1994 reporting year, the Department of Energy (DOE) instructed its facilities to begin filing TRI reports for 1993, a year earlier than mandated by the Executive Order. In addition, since 1987 (the first TRI reporting year), facilities owned by the Federal government but operated by private contractors have had to report to TRI if they met the reporting thresholds. These contractors are still required to report, even after 1994. The reports from the Federal government agencies are entered into the TRI database, but the reports for these facilities from the private contractors are not, in order to avoid duplication.

1996 TRI Data for Federal Facilities

For the 1996 reporting year, 133 Federal facilities from 13 Federal agencies submitted 378 reports to TRI. Table 10-1 summarizes TRI data for these Federal agencies. Of the forms submitted by Federal facilities, 7.4% (28) were Form A certification statements, certifying that a facility's



Box 10-1. Federal Agencies Reporting to TRI

Federal Agencies Reporting to TRI

- Department of Defense (DOD)
 - Air Force
 - Army
 - Defense Logistics Agency (DLA)
 - Marines
 - Navy
- Army Corps of Engineers (Corp)
- Department of Agriculture (Agriculture)
- Department of Energy (DOE)
- Department of Health and Human Services (HHS)
- Department of Interior (Interior)
- Department of Justice (DOJ)
- Department of Transportation (DOT)
- Department of Treasury (Treasury)
- Department of Veterans Affairs (VA)
- Environmental Protection Agency (EPA)
- National Aeronautics and Space Administration (NASA)
- Tennessee Valley Authority (TVA)
- U.S. Enrichment Corporation (USEC)

total annual reportable amount of a TRI chemical was less than 500 pounds for the year and that the facility did not manufacture, process, or otherwise use more than 1 million pounds. (The Form A certification statement is explained in Chapter 1.)

The Department of Defense (DOD) had the largest number of facilities reporting, 74 or 55.6% of the total. DOD facilities accounted for 65.3% of the Federal facility forms, with 247. The Department of Energy had the next largest number of facilities with 19 facilities (14.3%) and 52 forms (13.8%). Within DOD, the Army had the most facilities with 31 (41.9% of all DOD facilities).

As shown in Table 10-1, Air Force facilities ranked first for total on- and off-site releases but third for total production-related waste. Total releases from Air Force facilities were 2.1 million pounds (31.7% of the Federal facilities' total), and total production-related waste was 2.7 million pounds (5.7% of the Federal facilities' total). Army facilities

Table 10-1. Summary of TRI Information by Agency, 1996: Federal Facilities

Total On- and Off-site Releases Rank	Total Production-related Waste Rank	Agency	Total Facilities Number	Total Forms Number	Form As Number	Total On-site Releases Pounds	Total Off-site Releases Pounds	Total On- and Off-site Releases Pounds	Total Other On-site Waste Management Pounds	Total Transfers Off-site for Further Waste Management Pounds	Total Production-related Waste Pounds	Non-Production-related Waste Pounds
1	3	Dept. of Defense	74	247	18	3,428,786	599,877	4,028,663	20,389,006	5,486,838	29,756,235	96,155
2	1	Air Force	19	64	7	1,983,113	80,029	2,063,142	294,100	381,249	2,689,218	60,311
14	6	Army	31	105	9	665,507	208,526	874,033	18,709,920	4,220,984	23,757,167	35,804
8	10	Defense Logistics Agency	1	5	0	4,854	0	4,854	1,184,803	0	1,189,657	0
3	4	Marines	7	22	0	165,652	90,541	256,193	0	288,236	526,279	40
		Navy	16	51	2	609,660	220,781	830,441	200,183	596,369	1,593,914	0
13	16	Army Corps of Engineers	2	3	0	9,210	0	9,210	1,575	180	10,955	0
6	9	Dept. of Agriculture	8	11	0	605,480	0	605,480	57,600	250	663,530	68
4	5	Dept. of Energy	19	52	2	740,637	1,174	741,811	732,432	31,011	1,534,559	8,289
16	12	Dept. of Health and Human Services	1	1	0	0	750	750	43,000	0	43,900	450
15	15	Dept. of Interior	4	5	2	4,772	0	4,772	0	0	16,173	0
11	13	Dept. of Justice	2	2	0	11,605	0	11,605	0	0	23,305	0
10	14	Dept. of Transportation	1	2	0	19,600	1,096	20,696	0	0	19,600	0
9	2	Dept. of Treasury	8	15	1	57,287	9,350	66,637	120	13,743,208	13,848,646	0
17	17	Environmental Protection Agency	1	2	0	17	0	17	0	0	17	0
7	8	National Aeronautics and Space Admin.	7	24	3	327,182	320	327,502	429,188	246,121	794,021	2,801
12	11	Tennessee Valley Authority	4	6	1	10,071	0	10,071	52,500	12,226	74,797	0
5	7	U.S. Enrichment Corporation	2	8	1	675,204	230	675,434	122,400	0	806,080	0
		Total for Federal Facilities	133	378	28	5,889,851	612,797	6,502,648	21,827,821	19,519,834	47,591,818	107,763

Note: On-site Releases from Section 5 of Form R. On-site Waste Management from Section 8 of Form R. Off-site Releases from Section 6 (transfers off-site to disposal) of Form R. Total Transfers Off-site for Further Waste Management from Section 6 (excluding transfers off-site to disposal) of Form R. Total Production-related Waste sums Section 8 (Current Year, Column B) of Form R, except: Non-production-related Waste (remedial catastrophic incidents).



reported much larger amounts of other on-site waste management and, therefore, much larger amounts of total production-related waste, ranking first in both these categories. Army facilities reported 18.7 million pounds of chemicals managed on-site (85.7% of the total managed on-site by Federal facilities) and 23.8 million pounds of total production-related waste (49.9% of the total).

Facilities belonging to the Navy accounted for the largest amounts of off-site releases (transfers off-site to disposal), with 221,000 pounds (36.0% of the total). Facilities reporting from the Department of Treasury accounted for 70.4% (13.7 million pounds) of the total transfers off-site for further waste management.

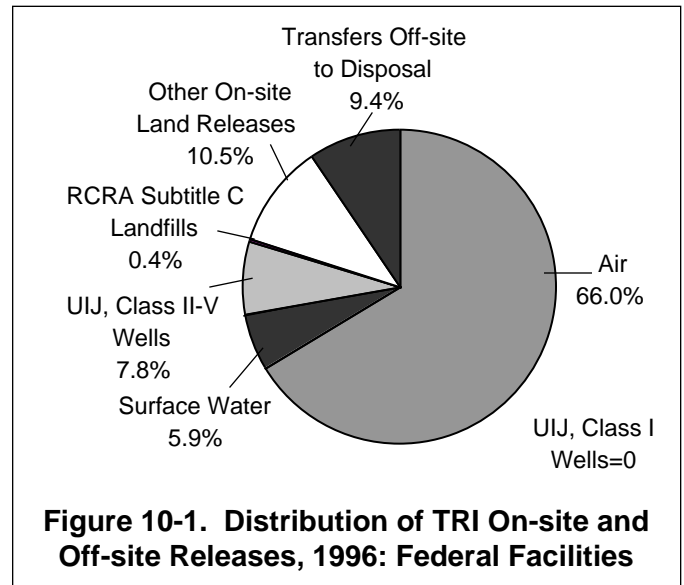


Figure 10-1. Distribution of TRI On-site and Off-site Releases, 1996: Federal Facilities
 Note: On-site Releases from Section 5 of Form R. Off-site Releases from Section 6 (transfers off-site to disposal) of Form R. UIJ = underground injection.

On- and Off-site Releases

Two-thirds (66.0%) of all on- and off-site releases reported by Federal facilities were air emissions, 4.3 million pounds out of 6.5 million pounds of total releases (see Table 10-2 and Figure 10-1). Air Force facilities reported the largest air emissions, 1.9 million pounds, which was 44.1% of total air

emissions from Federal facilities. (See Figure 10-2) This is not surprising since a number of the Air Force installations are large facilities engaged in aircraft repair and maintenance, using volatile chemicals to clean parts and strip paint.

Table 10-2. TRI On-site and Off-site Releases, 1996: Federal Facilities

Agency	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection		On-site Land Releases		Total On-site Releases Pounds	Off-site Releases Transfers Off-site to Disposal Pounds	Total On- & Off-site Releases Pounds
			Class I Wells Pounds	Class II-V Wells Pounds	RCRA Subtitle C Landfills Pounds	Other On-site Land Releases Pounds			
Dept. of Defense	3,060,551	341,430	0	0	23,516	3,289	3,428,786	599,877	4,028,663
Air Force	1,895,706	87,366	0	0	0	41	1,983,113	80,029	2,063,142
Army	413,931	248,587	0	0	0	2,989	665,507	208,526	874,033
Defense Logistics Agency	4,854	0	0	0	0	0	4,854	0	4,854
Marines	165,625	27	0	0	0	0	165,652	90,541	256,193
Navy	580,435	5,450	0	0	23,516	259	609,660	220,781	830,441
Army Corps of Engineers	3,910	300	0	0	0	5,000	9,210	0	9,210
Dept. of Agriculture	10	0	0	0	0	605,470	605,480	0	605,480
Dept. of Energy	196,948	27,461	0	505,541	0	10,687	740,637	1,174	741,811
Dept. of Health and Human Services	0	0	0	0	0	0	0	750	750
Dept. of Interior	750	4,017	0	0	0	5	4,772	0	4,772
Dept. of Justice	10,305	1,300	0	0	0	0	11,605	0	11,605
Dept. of Transportation	19,600	0	0	0	0	0	19,600	1,096	20,696
Dept. of Treasury	280	107	0	0	0	56,900	57,287	9,350	66,637
Environmental Protection Agency	17	0	0	0	0	0	17	0	17
National Aeronautics and Space Admin.	327,182	0	0	0	0	0	327,182	320	327,502
Tennessee Valley Authority	335	9,736	0	0	0	0	10,071	0	10,071
U.S. Enrichment Corporation	674,953	251	0	0	0	0	675,204	230	675,434

Note: On-site Releases from Section 5 of Form R. Off-site Releases from Section 6 (off-site transfers to disposal) of Form R.

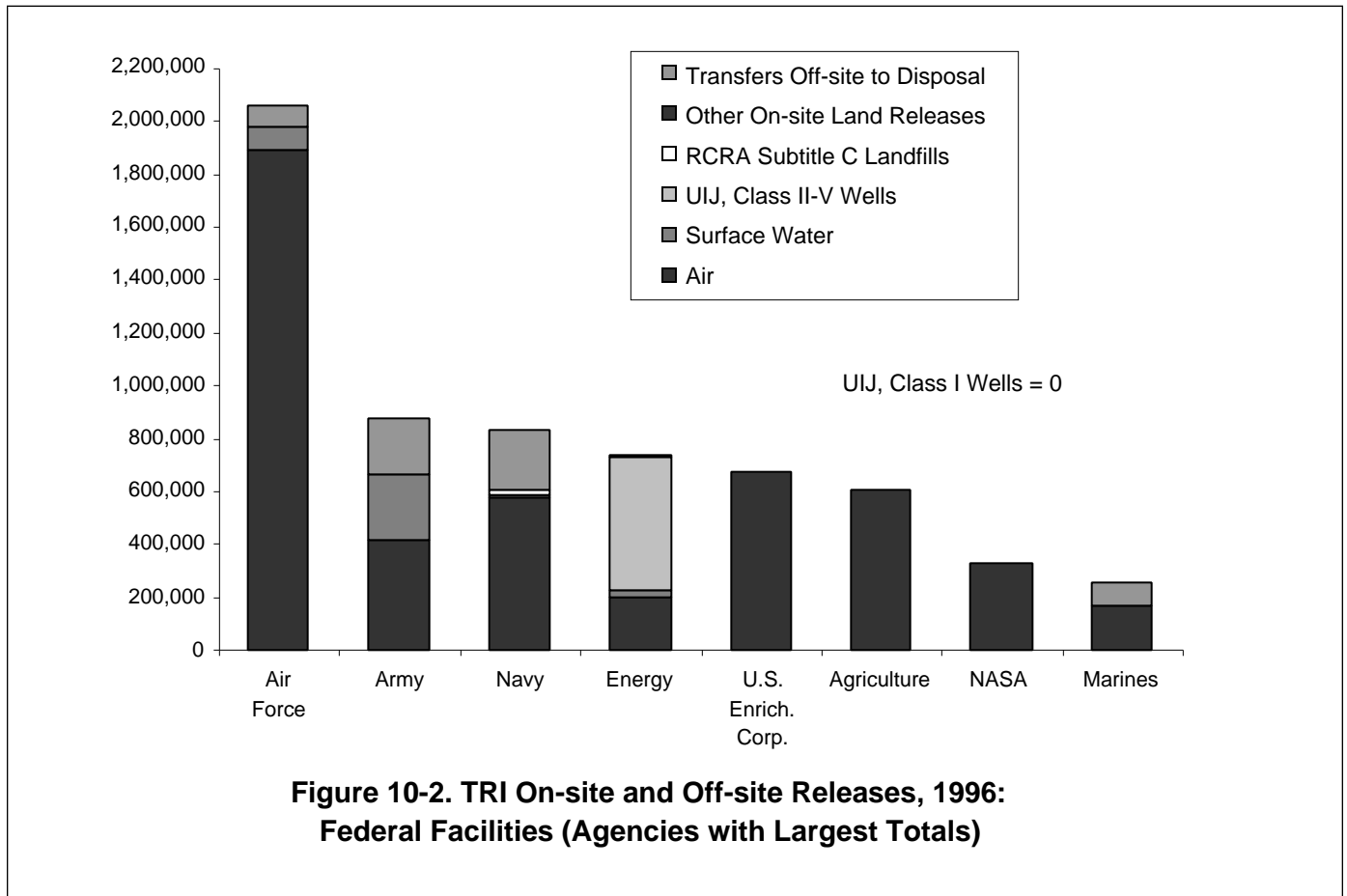
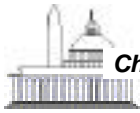


Figure 10-2. TRI On-site and Off-site Releases, 1996: Federal Facilities (Agencies with Largest Totals)

Note: On-site Releases from Section 5 of Form R. Off-site Releases from Section 6 (off-site transfers off-site to disposal). UIJ = underground injection.

All other categories of releases were less than 700,000 pounds total. Nearly all releases from U.S. Department of Agriculture facilities were on-site releases to land, which were 605,000 pounds (accounting for 85.9% of total land releases). Of the more than 600,000 pounds of off-site releases (transfers off-site to disposal), Department of Defense facilities accounted for 97.9%, with Navy and Army facilities each representing one-third of that total. Department of Energy facilities reported all of the releases to underground wells (503,000 pounds). Surface water discharges were a total of 385,000 pounds with Army facilities accounting for 64.6% of the total.

Other On-site Waste Management

Recycling was the largest on-site waste management method used by Federal facilities, with 12.2 million pounds (55.8%), followed by treatment with 9.7 million pounds (44.2%). Very little (7,700 pounds) on-site energy recovery was reported. On-site waste management data appear in Table 10-3, and their distribution is illustrated in Figure 10-3.

For all types of on-site waste management—recycling, energy recovery, and treatment—Army facilities reported the largest quantities (see Table 10-3 and Figure 10-4). Army facilities reported a total of 18.7 million pounds of on-site waste management, which was 85.7% of the total for Federal facilities. This was 10.1 million pounds



Table 10-3. TRI Other On-site Waste Management, 1996: Federal Facilities

Agency	Recycled On-site Pounds	Energy Recovery On-site Pounds	Treated On-site Pounds	Total Other On-site Waste Management Pounds
Dept. of Defense	11,378,222	7,700	9,003,084	20,389,006
Air Force	61,738	0	232,362	294,100
Army	10,109,100	7,700	8,593,120	18,709,920
Defense Logistics Agency	1,184,803	0	0	1,184,803
Marines	0	0	0	0
Navy	22,581	0	177,602	200,183
Army Corps of Engineers	0	0	1,575	1,575
Dept. of Agriculture	0	0	57,600	57,600
Dept. of Energy	362,585	0	369,847	732,432
Dept. of Health and Human Services	0	0	43,000	43,000
Dept. of Interior	0	0	0	0
Dept. of Justice	0	0	0	0
Dept. of Transportation	0	0	0	0
Dept. of Treasury	0	0	120	120
Environmental Protection Agency	0	0	0	0
National Aeronautics and Space Admin.	429,110	0	78	429,188
Tennessee Valley Authority	0	0	52,500	52,500
U.S. Enrichment Corporation	0	0	122,400	122,400
Total for Federal Facilities	12,169,917	7,700	9,650,204	21,827,821

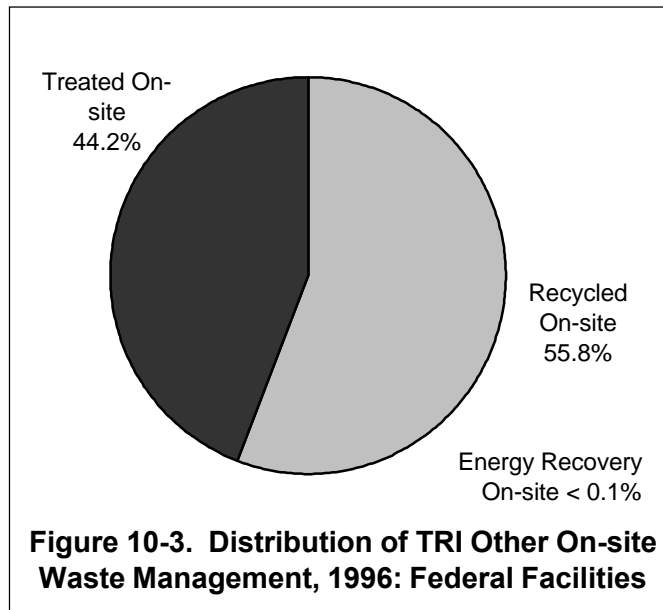
Note: Other On-site Waste Management from Section 8 of Form R.

recycled on-site and 8.6 million pounds treated on-site. Only facilities from one other agency reported more than 1 million pounds of on-site waste management. The Defense Logistics Agency facility reported 1.2 million pounds of chemicals recycled on-site.

Transfers Off-site for Further Waste Management

Transfers to recycling were the largest off-site transfer type reported by Federal facilities, with 18.6 million pounds (95.0% of the total), as shown in Table 10-4 and illustrated in Figure 10-5. Other types of transfers totaled less than 600,000 pounds.

Department of Treasury facilities accounted for 74.1% of all transfers to recycling (13.7 million pounds) and 70.4% of all transfers off-site for further waste management (also 13.7 million pounds). Department of Defense facilities accounted for 28.1% of all such transfers (5.5 million pounds) with Army facilities reporting 4.2



Note: Data from Section 8 of Form R.

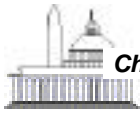


Table 10-4. TRI Transfers Off-site for Further Waste Management, 1996: Federal Facilities

Agency	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs Pounds	Other Off-site Transfers Pounds	Total Off-site Transfers for Further Waste Management Pounds
Dept. of Defense	4,566,374	295,346	566,657	58,461	0	5,486,838
Air Force	152,142	70,479	129,132	29,496	0	381,249
Army	3,855,274	65,314	293,964	6,432	0	4,220,984
Defense Logistics Agency	0	0	0	0	0	0
Marines	95,622	105,415	86,184	1,015	0	288,236
Navy	463,336	54,138	57,377	21,518	0	596,369
Army Corps of Engineers	0	0	0	180	0	180
Dept. of Agriculture	0	0	0	250	0	250
Dept. of Energy	28,771	0	2,240	0	0	31,011
Dept. of Health and Human Services	0	0	0	0	0	0
Dept. of Interior	0	0	0	0	0	0
Dept. of Justice	0	0	0	0	0	0
Dept. of Transportation	0	0	0	0	0	0
Dept. of Treasury	13,742,428	0	5	775	0	13,743,208
Environmental Protection Agency	0	0	0	0	0	0
National Aeronautics and Space Admin.	215,930	8,755	21,435	1	0	246,121
Tennessee Valley Authority	0	0	0	12,226	0	12,226
U.S. Enrichment Corporation	0	0	0	0	0	0
Total for Federal Facilities	18,553,503	304,101	590,337	71,893	0	19,519,834

Note: Off-site Transfers for Further Waste Management from Section 6 (excluding off-site transfers to disposal) of Form R. Other Off-site Transfers are transfers reported without a valid waste management code.

million pounds, almost all as transfers to recycling. (See Table 10-4 and Figure 10-6)

1996 TRI Data by State for Federal Facilities

Federal facilities reporting to TRI in 1996 were located in 36 states and the territory of Guam. California had 17 facilities, and Texas 11. Federal facilities located in California led the other states in both on-site and off-site releases, as shown in Table 10-5. Federal facilities in California reported 1.1 million pounds of on- and off-site releases (16.6% of the total of 6.5 million pounds). Oklahoma was second with 756,000 pounds, or 11.6%, and Georgia was third with 743,000 pounds, or 11.4%. Map 10-1 shows the distribution of total on- and off-site releases by state for Federal facilities.

For other on-site waste management, Virginia reported 19.5 million pounds, or 89.3% of the total. Federal facilities located in Colorado reported 9.0 million pounds transferred off-site for further waste management, 45.9% of the total of such transfers. Pennsylvania reported 4.8 million pounds (24.8%), and the state with the third largest amount was Missouri with 2.5 million pounds (12.6%).

Production-related waste totaled 19.8 million pounds in Virginia, or 41.6% of all production-related waste reported by Federal facilities, followed by Colorado, with 9.1 million pounds, or 19.0%. Pennsylvania was third with 4.9 million pounds, or 10.3%. Finally, non-production related waste (from one-time events such as catastrophic events or clean-up actions) was 108,000 pounds in 1996, with Federal facilities in Missouri and in Tennessee reporting over 34,000 pounds (about 32% each).

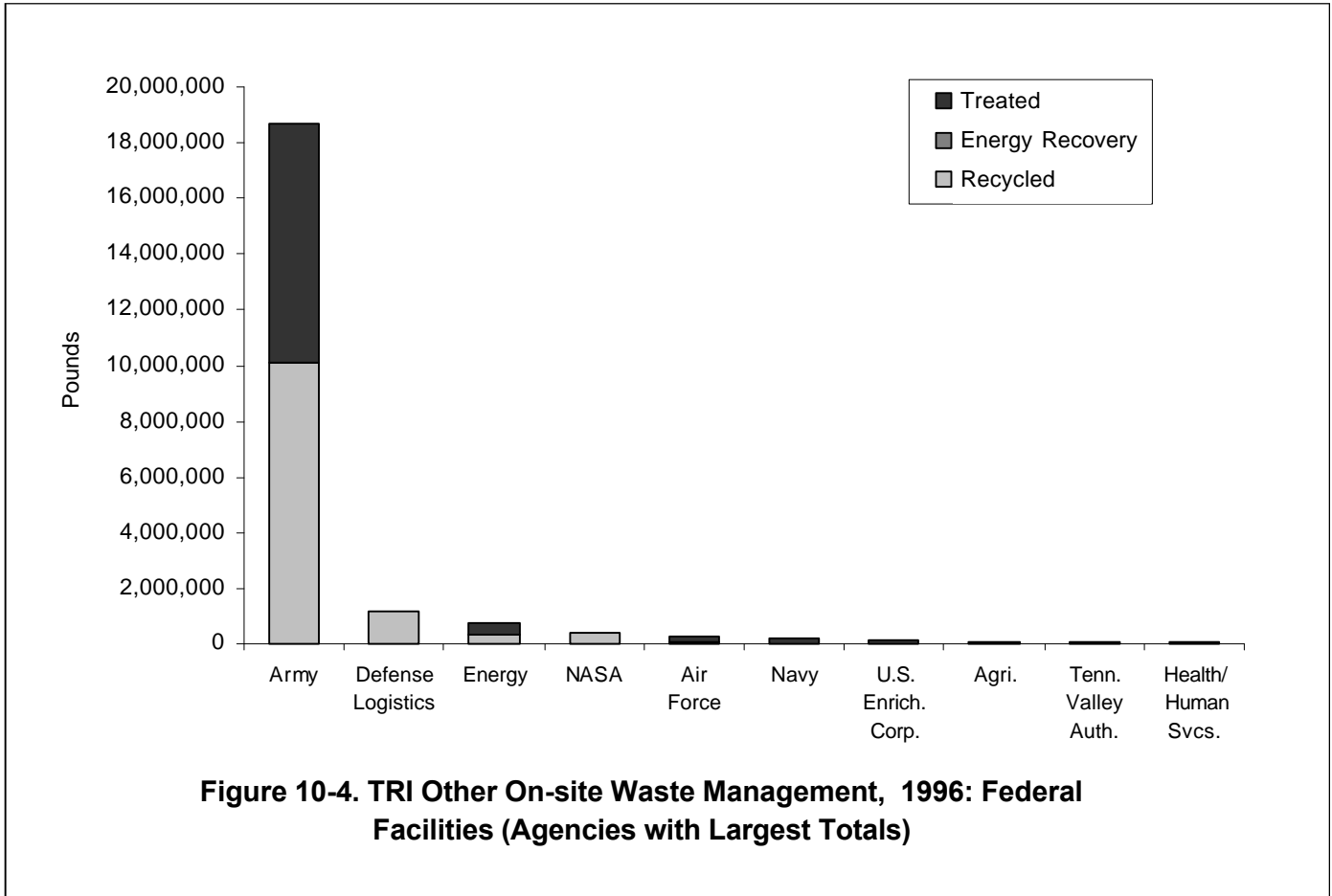


Figure 10-4. TRI Other On-site Waste Management, 1996: Federal Facilities (Agencies with Largest Totals)

Note: Other On-site Waste Management from Section 8 of Form R

1996 TRI Data by Chemical for Federal Facilities

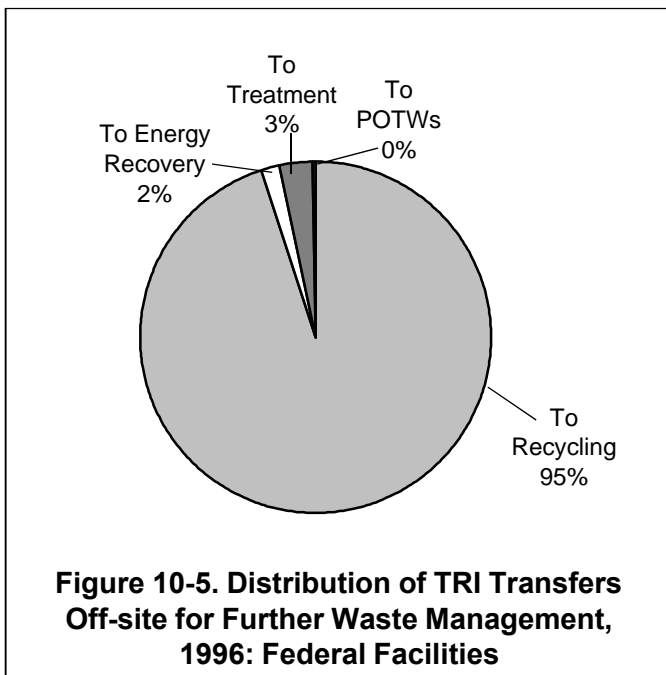


Figure 10-5. Distribution of TRI Transfers Off-site for Further Waste Management, 1996: Federal Facilities

Note: Transfers Off-site for Further Waste Management from Section 6 (excluding transfers off-site to disposal) of Form R.

In 1996, the chemical with the largest on- and off-site releases reported by Federal facilities was dichloromethane, with 857,000 pounds, the overwhelming majority of which was air emissions, as shown in Table 10-6. This chemical accounted for 13.2% of total on- and off-site releases reported by Federal facilities. The top 15 chemicals dominated the reporting picture for Federal facilities. These chemicals comprised 85.0% of total on- and off-site releases, with a majority of the reported releases in all on-site release types. Only for off-site releases (transfers to disposal), with 31.2% (191,000 pounds out of the total 613,000

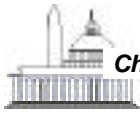


Table 10-5. Summary of TRI Information by State, 1996: Federal Facilities

State	Total Facilities Number	Total Forms Number	Form As Number	Total On-site Releases Pounds	Total Off-site Releases Pounds	Total On- and Off-site Releases Pounds	Total Other On-site Waste Management Pounds	Total Transfers Off-site for Further Waste Management Pounds	Total Production-related Waste Pounds	Non-Production-related Waste Pounds
Alabama	4	18	0	246,428	44,053	290,481	8,780	82,411	385,081	2,810
Arizona	4	7	0	30,167	10,700	40,867	42,500	31,420	114,131	15,700
Arkansas	1	3	0	113	0	113	0	46,898	47,011	0
California	17	39	0	913,607	167,125	1,080,732	51,601	665,745	1,818,956	431
Colorado	4	5	0	10,467	8,600	19,067	26,154	8,965,914	9,061,884	200
Connecticut	1	4	0	20,006	0	20,006	7,700	483,700	511,401	0
District of Columbia	3	4	0	9,210	250	9,460	1,695	12,336	23,171	0
Florida	4	19	3	375,460	16,290	391,750	266,913	60,910	715,634	0
Georgia	5	23	2	698,283	45,064	743,347	23,570	223,627	974,791	12,576
Guam	1	1	0	3,000	0	3,000	0	15,000	0	0
Hawaii	2	4	0	54,765	2,150	56,915	0	11,525	67,730	0
Idaho	1	1	0	8,212	0	8,212	141,700	302	150,200	0
Illinois	3	6	0	7,324	0	7,324	400	8,020	9,987	5,800
Iowa	1	1	0	13,799	0	13,799	0	3,620	17,419	0
Kansas	1	1	0	0	140	140	14,623	20,999	35,762	0
Kentucky	7	10	1	370,078	0	370,078	78,700	72,369	465,246	100
Louisiana	2	4	0	5,429	0	5,429	0	0	5,429	0
Maine	2	3	2	15,362	0	15,362	0	1,311	16,673	0
Maryland	5	8	0	98,217	1,846	100,063	74,586	73,077	246,780	450
Michigan	1	2	0	17	0	17	0	0	17	0
Missouri	2	16	0	23,794	50,420	74,214	71,566	2,452,969	2,564,081	34,673
Nebraska	1	1	0	526,720	0	526,720	0	0	526,720	0
New Jersey	2	4	0	63,646	0	63,646	0	19,674	62,886	0
New Mexico	5	8	0	43,230	0	43,230	1,633	313	45,997	0
New York	3	12	0	1,817	61,500	63,317	127,603	161,638	352,416	0
North Carolina	3	13	0	121,458	21,695	143,153	0	118,505	262,201	50
Ohio	4	9	1	335,311	230	335,541	186,600	4,360	531,604	30
Oklahoma	4	20	4	745,872	10,160	756,032	191,168	279,559	1,227,882	131
Oregon	3	11	9	500	0	500	0	0	57	5
Pennsylvania	4	14	1	37,183	2,748	39,931	23,111	4,837,528	4,900,092	0
South Carolina	1	7	0	24,031	0	24,031	182,820	597	206,730	31
Tennessee	7	23	2	393,995	9,059	403,054	506,752	283	875,100	34,334
Texas	11	26	1	245,784	21,781	267,565	124,724	310,138	761,246	442
Utah	2	6	0	84,000	42,310	126,310	134,900	250	261,169	0
Virginia	7	25	0	191,428	220	191,648	19,496,244	283,594	19,776,151	0
Washington	3	13	0	68,111	96,456	164,567	22,578	271,242	448,916	0
Wyoming	2	7	2	103,027	0	103,027	19,200	0	121,267	0
Total for Federal Facilities	133	378	28	5,889,851	612,797	6,502,648	21,827,821	19,519,834	47,591,818	107,763

Note: On-site Releases from Section 5 of Form R. On-site Waste Management from Section 8 of Form R. Off-site Releases from Section 6 (transfers off-site to disposal) of Form R. Total Transfers Off-site for Further Waste Management from Section 6 (excluding transfers off-site to disposal) of Form R. Total Production-related Waste sums Section 8 (Current Year, Column B) of Form R, except: Non-production-related Waste (remedial/catastrophic incidents).

pounds), did the top 15 chemicals not constitute the majority.

The 3.8 million pounds of air emissions of the top 15 were 89.4% of all air emissions reported by Federal facilities for 1996. Air emissions were the largest type of on- or off-site release reported by Federal facilities and the largest release for 11 of the top 15 chemicals in Federal facility reporting. For surface water discharges, the top 15 constituted 93.7% of the amount reported by Federal facilities. Two-thirds (65.8%) of all surface water discharges were nitrate compounds (253,000 pounds out of

385,000 pounds). Methanol accounted for 98.8% of all on-site underground injection (499,000 pounds out of 506,000 pounds). Similarly, one chemical, ammonia, accounted for 80.0% of all on-site land releases (545,000 pounds out of 681,000 pounds).

OSHA Carcinogens

On- and off-site releases of chemicals designated as OSHA carcinogens totaled 1.7 million pounds, or 26.2% of all releases off reported by Federal facilities in 1996, as shown on Table 10-7. (OSHA carcinogens and the bases for their designation

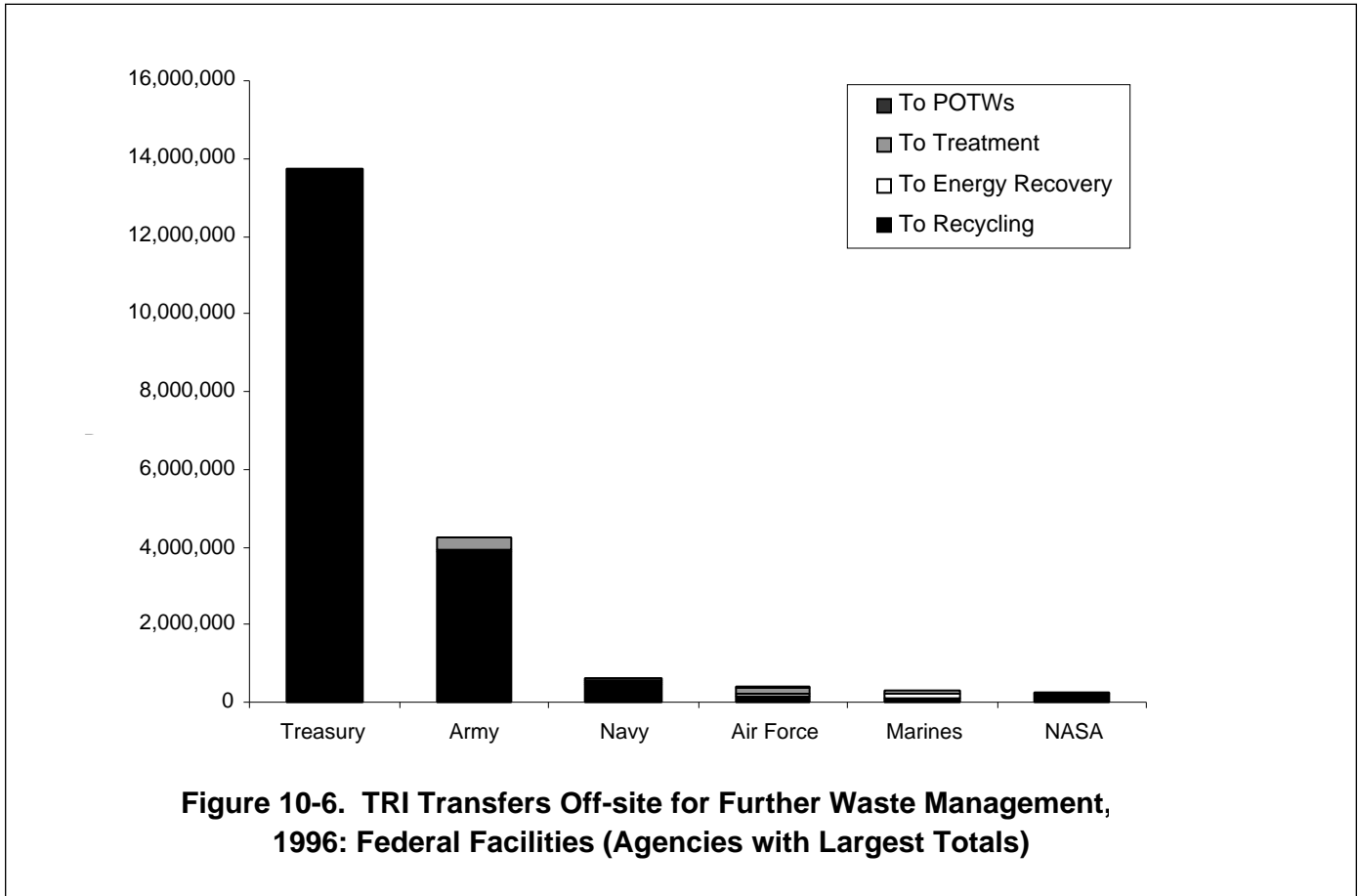


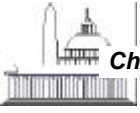
Figure 10-6. TRI Transfers Off-site for Further Waste Management, 1996: Federal Facilities (Agencies with Largest Totals)

Note: Off-site Transfers for Further Waste Management from Section 6 (excluding off-site transfers to disposal) of Form R.

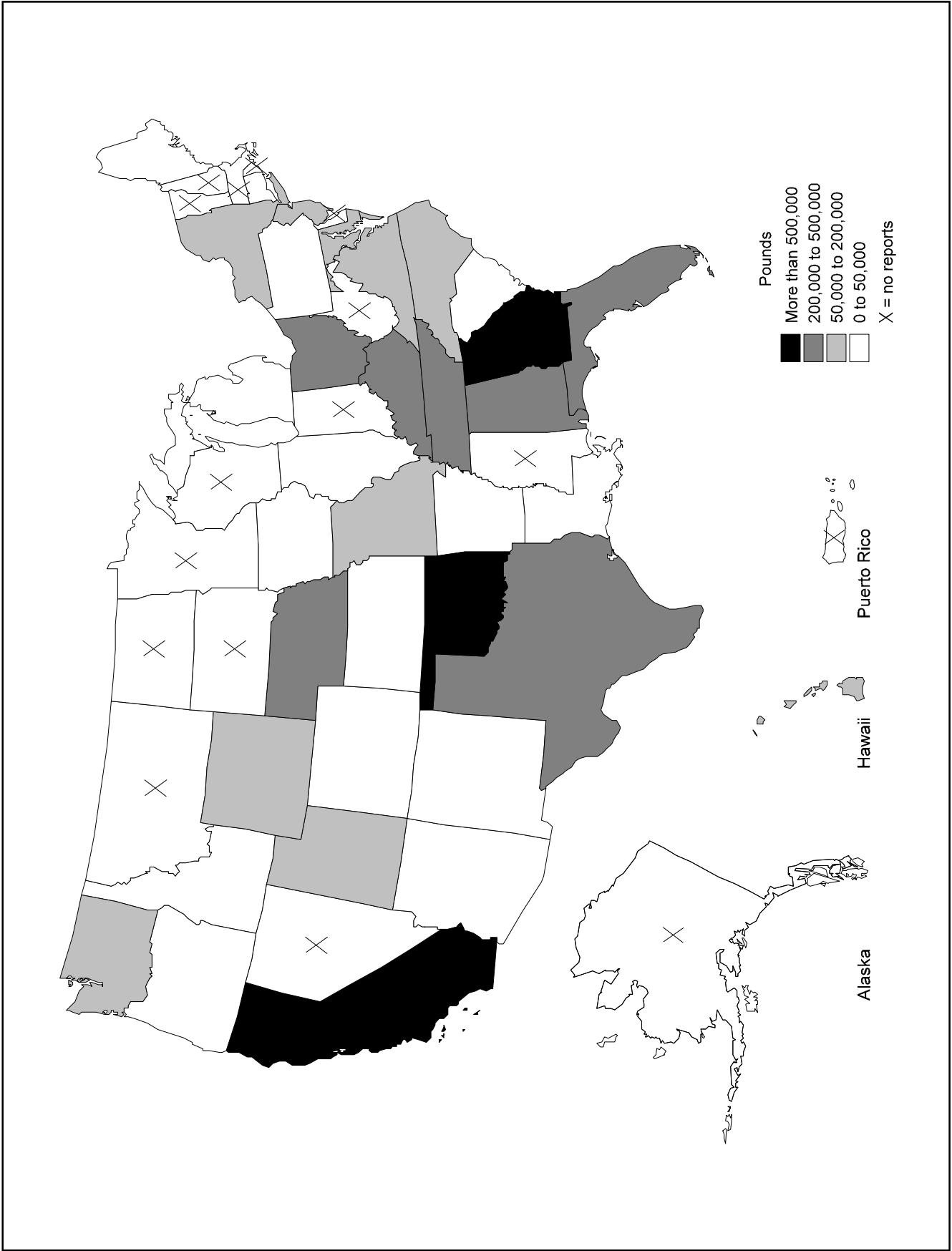
Table 10-6. The 15 Chemicals with the Largest Total On-site and Off-site Releases, 1996: Federal Facilities (in Rank Order)

CAS Number	Chemical	Total Air Emissions Pounds	Surface Water Discharges Pounds	On-site Land Releases				Total On-site Releases Pounds	Off-site Releases Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
				Underground Injection Class I Wells Pounds	Underground Injection Class II-V Wells Pounds	RCRA Subtitle C Landfills Pounds	Other On-site Land Releases Pounds			
75-09-2	Dichloromethane	839,656	10	0	0	0	280	839,946	17,453	857,399
78-93-3	Methyl ethyl ketone	663,435	6,551	0	0	0	0	669,986	20,882	690,868
76-14-2	Dichlorotetrafluoroethane (CFC-114)	633,009	0	0	0	0	0	633,009	0	633,009
7664-41-7	Ammonia	43,275	7,640	0	0	0	545,025	595,940	0	595,940
67-56-1	Methanol	35,956	4,600	0	499,383	0	1,631	541,570	0	541,570
79-01-6	Trichloroethylene	352,838	11	0	0	5,000	0	357,849	0	357,849
—	Nitrate compounds	12	253,000	0	0	0	60,450	313,462	230	313,692
127-18-4	Tetrachloroethylene	292,384	251	0	0	0	0	292,635	4,739	297,374
107-21-1	Ethylene glycol	47,127	87,836	0	913	18,516	2,708	157,100	119,459	276,559
76-13-1	Freon 113	214,805	0	0	0	0	0	214,805	1,145	215,950
108-88-3	Toluene	173,491	250	0	250	0	1,351	175,342	16,977	192,319
1330-20-7	Xylene (mixed isomers)	166,355	250	0	2,120	0	1,850	170,575	4,980	175,555
7647-01-0	Hydrochloric acid	143,785	0	0	0	0	0	143,785	0	143,785
71-36-3	n-Butyl alcohol	134,768	0	0	0	0	0	134,768	1,900	136,668
71-55-6	1,1,1-Trichloroethane	97,113	6	0	0	0	0	97,119	3,349	100,468
	Subtotal	3,838,009	360,405	0	502,666	23,516	613,295	5,337,891	191,114	5,529,005
	Total for Federal Facilities	4,294,841	384,602	0	505,541	23,516	681,351	5,889,851	612,797	6,502,648

Note: On-site Releases from Section 5 of Form R. Off-site Releases from Section 6 (off-site transfers to disposal) of Form R.



Map 10-1-1. Total On- and Off-site Releases, 1996: Federal Facilities



Note: On-site Releases from Section 5 of Form R and Off-site Releases from Section 6 (transfers off-site to disposal) of Form R.



Table 10-7. TRI On-site and Off-site Releases of OSHA Carcinogens, 1996: Federal Facilities (in Rank Order)

Agency	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection		On-site Land Releases		Total On-site Releases Pounds	Off-site Releases Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
			Class I Wells Pounds	Class II-V Wells Pounds	RCRA Subtitle C Landfills Pounds	Other On-site Land Releases Pounds			
Air Force	1,125,408	273	0	0	0	0	1,125,681	11,418	1,137,099
Navy	154,390	1,000	0	0	5,000	0	160,390	81,246	241,636
Army	103,218	30	0	0	0	280	103,528	17,376	120,904
National Aeronautics and Space Admin	99,550	0	0	0	0	0	99,550	0	99,550
Dept. of Treasury	10	88	0	0	0	48,500	48,598	2,100	50,698
Dept. of Energy	21,027	653	0	250	0	5,343	27,273	1,174	28,447
Marines	13,726	0	0	0	0	0	13,726	1,265	14,991
Dept. of Justice	10,305	0	0	0	0	0	10,305	0	10,305
Subtotal	1,527,634	2,044	0	250	5,000	54,123	1,589,051	114,579	1,703,630
Total for Federal Facilities	4,294,841	384,602	0	505,541	23,516	681,351	5,889,851	612,797	6,502,648

Note: On-site Releases from Section 5 of Form R. Off-site Releases from Section 6 (off-site transfers to disposal) of Form R.

appear in Box 2-4 in Chapter 2.) Three of the 15 chemicals with the largest total releases are OSHA carcinogens: dichloromethane (ranked number one), trichloroethylene (sixth ranked), and tetrachloroethylene (eighth ranked). (See Table 10-6.) These three chemicals' releases totaled 1.5 million pounds, or 88.8% of the total for OSHA carcinogen releases by Federal facilities.

Air Force facilities reported two-thirds of OSHA carcinogen releases—1.1 million pounds, or 66.7%. Navy facilities were the group with the second largest amount, accounting for 242,000 pounds, or 14.2%. The type of release that was reported in the largest amounts for most OSHA carcinogens was air emissions. All but one of the Federal agencies reported the majority of their OSHA carcinogen releases as air emissions. For the Department of Treasury facilities, on-site releases to land were largest. (See Table 10-7 and Figure 10-7.)

1996 TRI Chemicals in Waste for Federal Facilities

Table 10-8 and Figure 10-8 present 1996 waste management data for all Federal facilities. Production-related waste totaled 47.6 million pounds in 1996. Off-site recycling was the largest waste management activity reported, with 18.5 million pounds, or 38.8% of total production-related waste. On-site recycling followed with 12.2 million pounds, or 25.6%.

Army facilities led all waste management categories in 1996, except off-site recycling and quantities released on- and off-site. Army facilities' total production-related waste was 23.8 million pounds, 49.9% of the total for Federal facilities. (See Table 10-8.) The agency reporting the second largest amount of total production-related waste was the Department of the Treasury, due to reports of 13.8 million pounds in off-site recycling. Third ranked were Air Force facilities, with 2.7 million pounds, of which 2.0 million pounds were released on- and off-site.

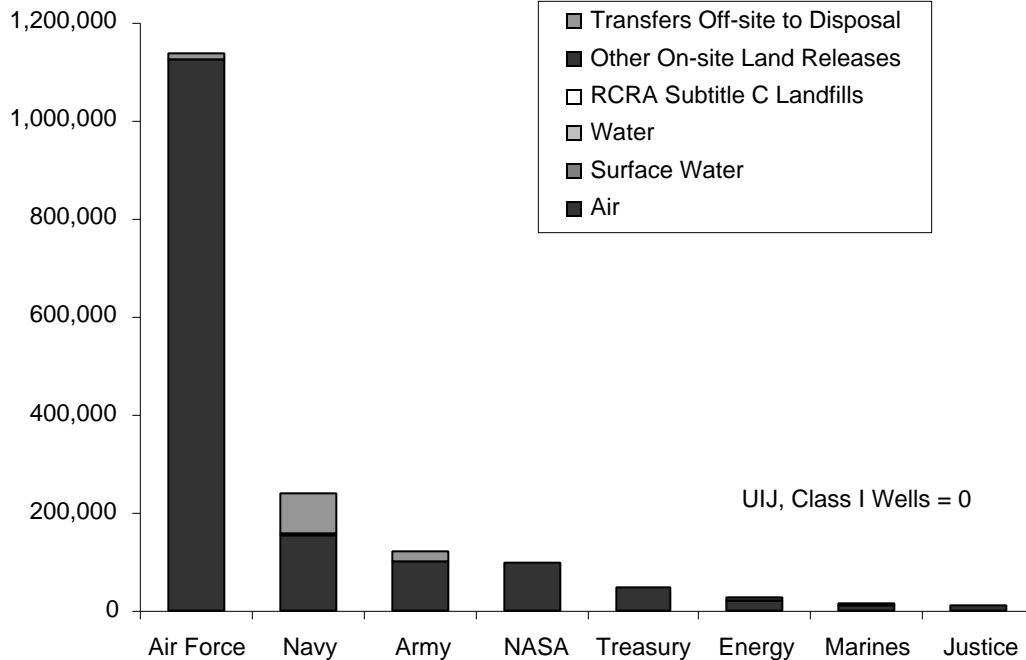
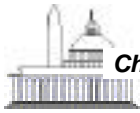


Figure 10-7. TRI On-site and Off-site Releases of OSHA Carcinogens, 1996: Federal Facilities (Agencies with Largest Totals)

Note: On-site Releases from Section 5 of Form R. Off-site Releases from Section 6 (off-site transfers to disposal) of Form R. UIJ = underground injection.

Table 10-8. Quantities of TRI Chemicals in Waste, 1996: Federal Facilities

Agency	Recycled On-site Pounds	Energy Recovery On-site Pounds	Treated On-site Pounds	Recycled Off-site Pounds	Energy Recovery Off-site Pounds	Treated Off-site Pounds	Quantity Released On- and Off-site Pounds	Total Production-related Waste Pounds	Non-Production-related Waste Pounds
Dept. of Defense	11,378,222	7,700	9,003,084	4,623,737	338,304	595,649	3,809,539	29,756,235	96,155
Air Force	61,738	0	232,362	151,932	69,562	161,785	2,011,839	2,689,218	60,311
Army	10,109,100	7,700	8,593,120	3,855,829	108,514	243,270	839,634	23,757,167	35,804
Defense Logistics Agency	1,184,803	0	0	0	0	0	4,854	1,189,657	0
Marines	0	0	0	152,612	106,000	87,034	180,633	526,279	40
Navy	22,581	0	177,602	463,364	54,228	103,560	772,579	1,593,914	0
Army Corps of Engineers	0	0	1,575	0	0	180	9,200	10,955	0
Dept. of Agriculture	0	0	57,600	0	0	59	605,871	663,530	68
Dept. of Energy	362,585	0	369,847	68,509	0	2,242	731,376	1,534,559	8,289
Dept. of Health and Human Services	0	0	43,000	0	0	900	0	43,900	450
Dept. of Interior	0	0	0	0	0	0	16,173	16,173	0
Dept. of Justice	0	0	0	0	0	0	23,305	23,305	0
Dept. of Transportation	0	0	0	0	0	0	19,600	19,600	0
Dept. of Treasury	0	0	120	13,782,277	0	1	66,248	13,848,646	0
Environmental Protection Agency	0	0	0	0	0	0	17	17	0
National Aeronautics and Space Admin	429,110	0	78	8,790	7,270	19,098	329,675	794,021	2,801
Tennessee Valley Authority	0	0	52,500	0	0	12,226	10,071	74,797	0
U.S. Enrichment Corporation	0	0	122,400	0	0	0	683,680	806,080	0
Total for Federal Facilities	12,169,917	7,700	9,650,204	18,483,313	345,574	630,355	6,304,755	47,591,818	107,763

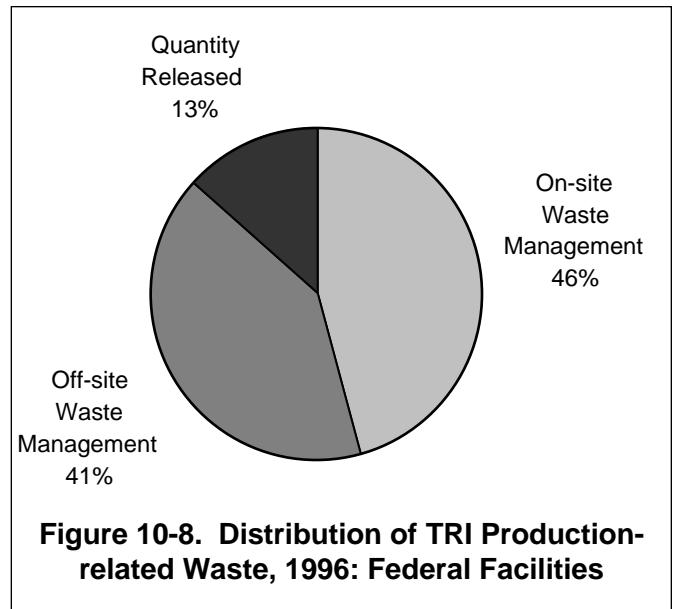
Note: Data from Section 8 of Form R.



Distribution of production-related waste for the top Federal agencies appears in Figure 10-9.

Projected Quantities of TRI Chemicals in Waste

Projections by Federal facilities are presented in Table 10-9. The table shows large increases for on-site recycling and on-site treatment for reporting year 1998. This is a result of a very large increase projected by one facility. The U.S. Army Ammunition Plant in Radford, Virginia, projected increases of nitric acid in on-site recycling from 9.2 million pounds to 92.0 million pounds and on-site treatment from 4.1 million



Note: Data from Section 8 of the Form R.

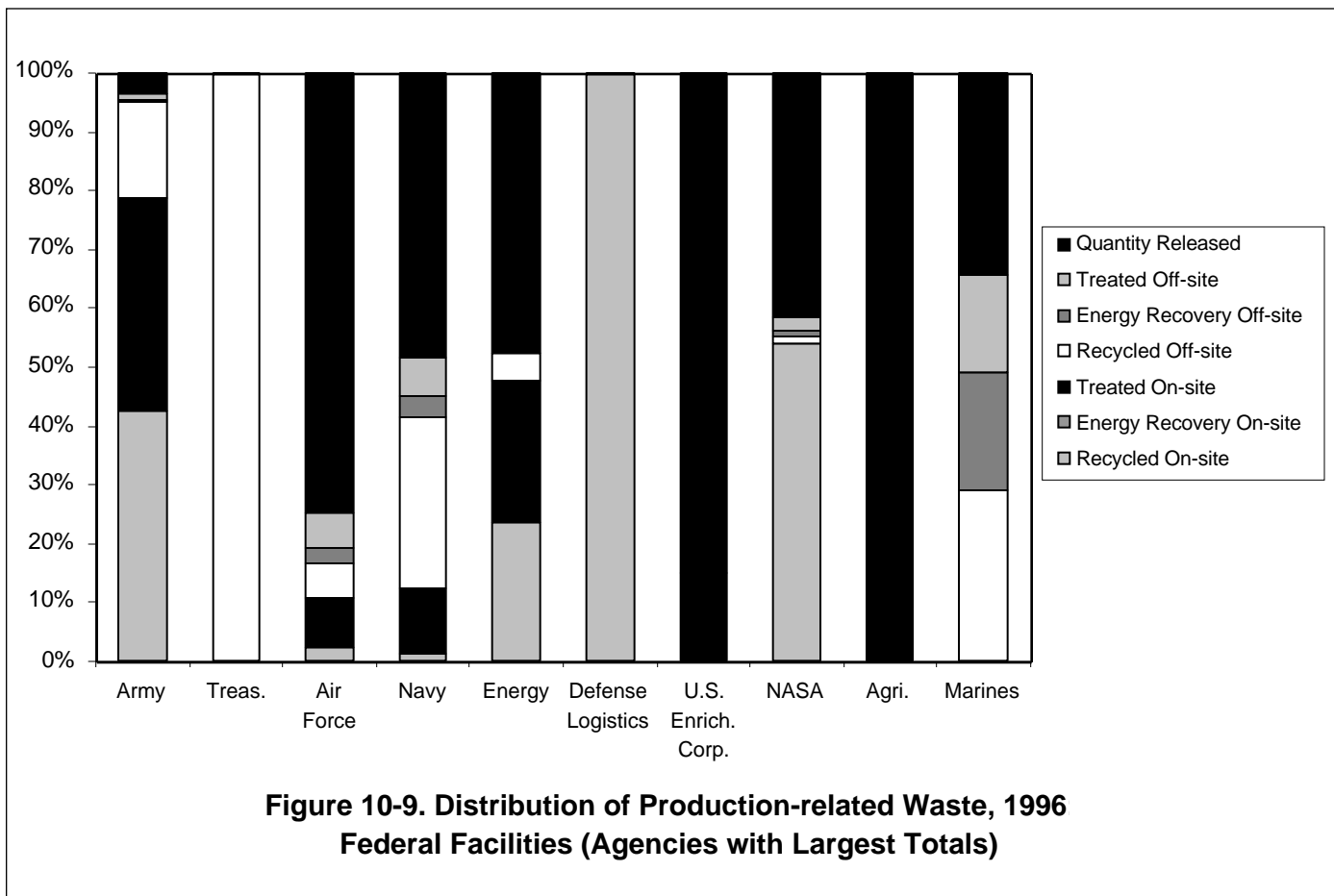


Figure 10-9. Distribution of Production-related Waste, 1996 Federal Facilities (Agencies with Largest Totals)

Note: Data from Section 8 of Form R.

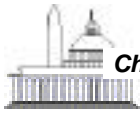


Table 10-9. Current Year and Projected Quantities of TRI Chemicals in Waste, 1996-1998: Federal Facilities

Waste Management Activity	Current Year 1996		Projected 1997		Projected 1998	
	Total Pounds	Percent of Total	Total Pounds	Percent of Total	Total Pounds	Percent of Total
On-site Waste Management						
Recycled On-site	12,169,917	25.6	15,987,048	36.7	94,151,989	60.5
Energy Recovery On-site	7,700	0.0	700	0.0	0	0.0
Treated On-site	9,650,204	20.3	7,420,741	17.0	42,365,388	27.2
Off-site Waste Management						
Recycled Off-site	18,483,313	38.8	14,024,602	32.2	13,539,209	8.7
Energy Recovery Off-site	345,574	0.7	326,682	0.7	305,222	0.2
Treated Off-site	630,355	1.3	511,082	1.2	471,457	0.3
Quantity Released On- and Off-site	6,304,755	13.2	5,346,094	12.3	4,911,237	3.2
Total Production-related Waste for Federal Facilities	47,591,818	100.0	43,616,949	100.0	155,744,502	100.0
Waste Management Activity	Projected Change 1996-1997		Projected Change 1997-1998		Projected Change 1996-1998	
	Percent		Percent		Percent	
On-site Waste Management						
Recycled On-site	31.4		488.9		673.6	
Energy Recovery On-site	-90.9		-100.0		-100.0	
Treated On-site	-23.1		470.9		339.0	
Off-site Waste Management						
Recycled Off-site	-24.1		-3.5		-26.7	
Energy Recovery Off-site	-5.5		-6.6		-11.7	
Treated Off-site	-18.9		-7.8		-25.2	
Quantity Released On- and Off-site	-15.2		-8.1		-22.1	
Total Production-related Waste for Federal Facilities	-8.4		257.1		227.3	

Note: Current year and projected year amounts are taken from Section 8 of Form R for 1996.

pounds to 41.0 million pounds from 1996 to 1998. The facility expected to install a new system to make dinitrotoluene. Since then, however, the facility has decided not to install the new system so projections should be lower in subsequent years.

Federal facilities projected an overall increase of over 200% in production-related waste from 1996 to 1998. Without the one form for nitric acid mentioned above, however, this would have been a projected decrease of 24.3%. On-site recycling and treatment are projected to increase, also because of the one form for nitric acid. Off-site recycling is projected to decrease by 26.7% from 1996 to 1998 and off-site treatment by 25.2%. Quantities released on- and off-site are also expected to decrease, by 22.1%. (As explained in Chapter 2, facilities not only report current data but project waste management quantities for the next two years in their TRI submissions.)

Source Reduction Activity

Among the 378 forms from Federal facilities, 155 or 41.0% indicated at least one source reduction activity underway in 1996, as shown in Table 10-10. As stated earlier, Executive Order 12856 establishes release and transfer goals for Federal facilities. The Executive Order encourages Federal facilities to use the waste management hierarchy, which gives priority to source reduction, as the means to achieve these goals. Several agencies seem to be accomplishing this source reduction objective. Two agencies that have one reporting facility each, the Department of Health and Human Services and the Department of Transportation, indicated source reduction activities for each chemical reported. Agencies with large percentages of forms that reported source reduction activities were the National Aeronautics and Space Administration (75.0% of forms submitted) and the Air Force (67.2%).



The most prevalent type of source reduction activity undertaken was good operating practices, with 71 forms, or 45.8% of all forms reporting source reduction activity. National Aeronautics and Space Administration facilities, however, reported good operating practices and process modifications in equal numbers, and Air Force facilities reported more forms with cleaning and degreasing and surface preparation and finishing. (See Table 10-10.)

largest reduction, in pounds, occurred in reported air emissions, which decreased 1.7 million pounds, or 28.7%. The largest percentage decrease was in on-site land releases, which were reduced by 33.7% (358,000 pounds). Off-site releases (transfers off-site to disposal) decreased by 28.2%, or 241,000 pounds. Very little change was reported in surface water discharges (a 1.0% decrease). Underground injection increased by 180,000 pounds, or 55.2%. Table 10-11 presents 1995 and 1996 reporting by Federal facilities, and Figure 10-10 illustrates the changes by release type.

Year-to-Year Comparisons for Federal Facilities

1995-1996 TRI Data for Federal Facilities

On- and Off-site Releases

From 1995 to 1996, on- and off-site releases reported by Federal facilities decreased by 24.9%, from 8.7 million pounds to 6.5 million pounds. The

Also indicated on Table 10-11 is a 16.6% decrease from 1995 to 1996 in the number of forms submitted by Federal facilities. At the same time, Form A certification statements from Federal facilities increased 40.0%. (The Form A certification statement is explained in Chapter 1.) This may reflect greater awareness of the Form A certification statement in its second year.

Table 10-12 shows changes in on-and off-site releases from 1995 to 1996 for each Federal agency. Air Force facilities reported the largest decreases with a reduction of 1.6 million pounds, or

Table 10-10. Number of Forms Reporting Source Reduction Activity, 1996: Federal Facilities

Agency	Total Forms Number	Category of Source Reduction Activity									
		Forms Reporting Source Reduction Activities		Good Operating Practices Number	Inventory Control Number	Spill and Leak Prevention Number	Raw Material Modifications Number	Process Modifications Number	Cleaning and Degreasing Number	Surface Preparation and Finishing Number	Product Modifications Number
		Number	Percent of All Forms								
Dept. of Defense	247	118	47.8	54	36	12	15	19	33	44	2
Air Force	64	43	67.2	16	9	4	10	11	27	22	2
Army	105	38	36.2	23	15	5	5	5	2	3	0
Defense Logistics Agency	5	0	0.0	0	0	0	0	0	0	0	0
Marines	22	11	50.0	1	0	0	0	0	0	14	0
Navy	51	26	51.0	14	12	3	0	3	4	5	0
Army Corps of Engineers	3	0	0.0	0	0	0	0	0	0	0	0
Dept. of Agriculture	11	4	36.4	0	0	4	0	0	0	0	0
Dept. of Energy	52	6	11.5	4	0	1	2	1	2	0	0
Dept. of Health and Human Services	1	1	100.0	0	0	1	0	0	0	0	0
Dept. of Interior	5	1	20.0	1	0	1	0	0	1	0	0
Dept. of Justice	2	0	0.0	0	0	0	0	0	0	0	0
Dept. of Transportation	2	2	100.0	0	2	0	0	0	0	0	0
Dept. of Treasury	15	4	26.7	1	0	0	3	0	0	0	0
Environmental Protection Agency	2	0	0.0	0	0	0	0	0	0	0	0
National Aeronautics and Space Ad	24	18	75.0	11	0	2	1	11	5	3	2
Tennessee Valley Authority	6	0	0.0	0	0	0	0	0	0	0	0
U.S. Enrichment Corp.	8	1	12.5	0	0	0	0	1	0	0	0
Total for Federal Facilities	378	155	41.0	71	38	21	21	32	41	47	4

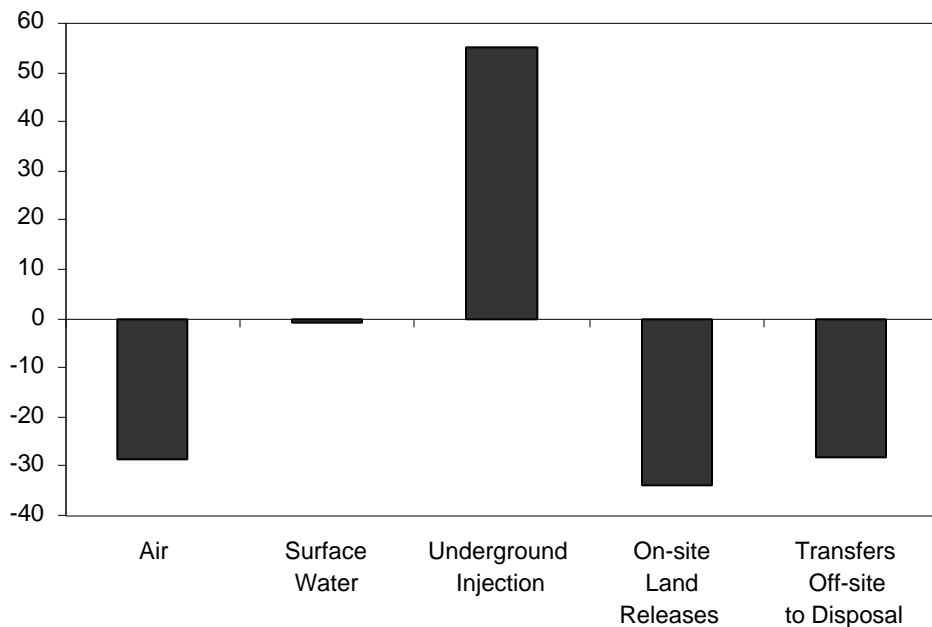
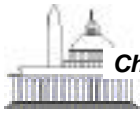


Figure 10-10. Percentage Change in On-site and Off-site Releases, 1995-1996: Federal Facilities

Note: On-site Releases from Section 5 of Form R and Off-site Releases from Section 6 (transfers off-site to disposal) of Form R. Breakdown of On-site Land Releases and Underground Injection not required in 1995.

44.4%. This was achieved primarily by reductions in air emissions, of 1.0 million pounds, or 34.7%. Army and Marine facilities reported the second and third largest decreases, with reductions of 286,000 pounds (24.7%) and 271,000 pounds (51.4%), respectively. All other agencies reported reductions from 1995 to 1996 except for Department of Agriculture and Department of Energy facilities, which reported increases, of 124,000 (25.8%) and 157,000 pounds (26.9%), respectively. Also, the Department of Health and Human Services facility and the Environmental Protection Agency facility showed small increases.

Other On-site Waste Management

Reporting of on-site waste management by Federal facilities also appears in Table 10-11. This table indicates a reduction in other on-site waste management for 1995 to 1996. However, these data include one form with an error in 1995 reporting. The

U.S. Army facility in Radford, Virginia, reported 34.0 million pounds of nitric acid recycled on-site for 1995 in error. The correct amount is 3.4 million pounds. Box 10-2 presents the corrected data for Table 10-11. As Box 10-2 indicates, this corrected information also applies to several other sections later in this chapter. The following discussion is based on the information shown in Box 10-2.

In 1995, on-site waste management by Federal facilities totaled 18.1 million pounds, and in 1996, 21.8 million pounds. This constituted a 20.4% increase, which was from an increase in on-site recycling of 7.1 million pounds. On-site treatment decreased by 3.4 million pounds, or 26.2%. Very little on-site energy recovery is reported by Federal facilities.

Table 10-13 shows changes in on-site waste management from 1995 to 1996 for each Federal agency. Box 10-2 gives the corrected data for this



Table 10-11. Comparison of TRI On-site and Off-site Releases, Other On-site Waste Management, and Transfers Off-site for Further Waste Management, 1995-1996: Federal Facilities

	1995 Number	1996 Number	Change 1995 to 1996 Percent
Total Facilities	148	133	-10.1
Total Forms	453	378	-16.6
Form Rs	433	350	-19.2
Form As	20	28	40.0
	Pounds	Pounds	Percent
<u>On-site Releases</u>			
Total Air Emissions	6,025,046	4,294,841	-28.7
Fugitive Air	2,898,152	2,463,277	-15.0
Point Source Air	3,126,894	1,831,564	-41.4
Surface Water Discharges	388,541	384,602	-1.0
Underground Injection	325,751	505,541	55.2
On-site Land Releases	1,062,633	704,867	-33.7
Total On-site Releases	7,801,971	5,889,851	-24.5
<u>Off-site Releases</u>			
Transfers Off-site to Disposal	853,704	612,797	-28.2
Total On- and Off-site Releases	8,655,675	6,502,648	-24.9
<u>Other On-site Waste Management</u>			
Recycled On-site	35,643,116	12,169,917	-65.9
Energy Recovery On-site	13,084	7,700	-41.1
Treated On-site	13,067,406	9,650,204	-26.2
Total Other On-site Waste Management	48,723,606	21,827,821	-55.2
<u>Transfers Off-site for Further Waste Management</u>			
Transfers to Recycling	20,692,884	18,553,503	-10.3
Transfers to Energy Recovery	422,412	304,101	-28.0
Transfers to Treatment	896,623	590,337	-34.2
Transfers to POTWs	115,132	71,893	-37.6
Other Off-site Transfers	0	0	—
Total Transfers Off-site for Further Waste Management	22,127,051	19,519,834	-11.8

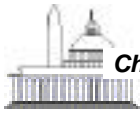
Note: **On-site Releases** from Section 5 of Form R and **Off-site Releases** from Section 6 (transfers off-site to disposal) of Form R. **Other On-site Waste Management** from Section 8 of Form R. **Transfers Off-site for Further Waste Management** from Section 6 (excluding transfers off-site to disposal) of Form R. Breakdown of Underground Injection and On-site Land Releases not required in 1995. Other Off-site Transfers are transfers reported without a valid waste management code. See corrected on-site waste management data in Box 10-2.

table, taking into account the effect of the error by one Army facility. Army facilities reported the largest amounts of on-site waste management in both years. In both 1995 and 1996, they accounted for 85.7%. The increase was 3.2 million pounds, or 20.5%. Five other agencies also showed increases: Defense Logistics Agency, Army Corps of Engineers, Departments of Agriculture and Energy, and the U.S. Enrichment Corporation. Seven agencies reported reductions from 1995 to 1996: Air Force, Marines, Navy, Departments of Health and Human Services and Treasury, National Aeronautics and Space Administration, and the

Tennessee Valley Authority. The other five Federal agencies (Departments of Interior, Justice, Transportation, and Veterans Affairs, and the Environmental Protection Agency) reported no amounts for on-site waste management in either year.

Transfers Off-site for Further Waste Management

Federal facilities reported decreases in transfers off-site for further waste management of 11.8%, from 22.1 million pounds to 19.5 million pounds. These



Box 10-2. Correction to TRI Other On-site Waste Management Data, 1995-1996: Federal Facilities

Correction to TRI Other On-site Waste Management Data, 1995-1996: Federal Facilities

One Army facility submitted a 1996 form with on-site recycling data in the prior year column (1995) that differed from 1995 reporting by a factor of 10. Correcting for this error would result in the following data for federal facilities' reporting of on-site waste management:

Corrected Data for Table 10-11 and Table 10-15

Waste Management Activity	1995	1996	Change from 1995-1996	
	Pounds	Pounds	Pounds	Percent
On-site Waste Management				
Recycled On-site	5,043,116	12,169,917	7,126,801	141.3
Energy Recovery On-site	13,084	7,700	-5,384	-41.1
Treated On-site	13,067,406	9,650,204	-3,417,202	-26.2
Total On-site Waste Management	18,123,606	21,827,821	3,704,215	20.4
Total Production-related Waste	47,483,831.00	47,591,818.00	107,987.00	0.2

Corrected Data for Table 10-13

Agency	Year	Recycled	Energy	Treated	Total
		On-site	Recovery	On-site	On-site Waste
		Pounds	On-site	Pounds	Management
			Pounds		Pounds
Army	96	10,109,100	7,700	8,593,120	18,709,920
	95	3,497,968	13,000	12,013,462	15,524,430

Note: One form from Army facility: change from 34,000,000 to 3,400,000, recycled on-site 1995.

data also appear in Table 10-11. The net decrease for off-site waste management was 2.6 million pounds. Transfers off-site to recycling constitute the largest portion of transfers off-site for further waste management and were reduced by 10.3%, or 2.1 million pounds from 1995 to 1996. All other such transfer categories also recorded decreases, of about 30%.

Table 10-14 shows changes in transfers off-site for further waste management from 1995 to 1996 for each Federal agency. Navy facilities reported the largest decrease in transfers off-site for further waste management, of 1.4 million pounds (69.7% reduction). The largest increase was reported by the National Aeronautics and Space Administration. Its

facilities reported an increase of 183,000 pounds, which was three times the amount reported by this agency in 1995.

Facilities with Large Increases and Decreases in Releases, 1995-1996

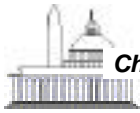
Two Federal facilities reported increases of greater than 100,000 pounds from 1995 to 1996. The U.S. Department of Energy Naval Petroleum Reserves of California in Tupman, California, reported an increase in on-site underground injection of methanol of 184,000 pounds, from 315,000 pounds in 1995 to 499,000 pounds in 1996. Methanol is used at this facility for freeze protection in pipelines. The amount used year to year depends on



Table 10-12. TRI On-site and Off-site Releases, 1995-1996: Federal Facilities

Agency	Year	On-site Releases				Total On-site Releases Pounds	Off-site Releases Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
		Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds			
Dept. of Defense	96	3,060,551	341,430	0	26,805	3,428,786	599,877	4,028,663
	95	4,612,697	359,098	0	489,891	5,461,686	797,675	6,259,361
Air Force	96	1,895,706	87,366	0	41	1,983,113	80,029	2,063,142
	95	2,903,603	34,748	0	486,507	3,424,858	287,560	3,712,418
Army	96	413,931	248,587	0	2,989	665,507	208,526	874,033
	95	649,851	312,766	0	2,874	965,491	194,482	1,159,973
Defense Logistics Agency	96	4,854	0	0	0	4,854	0	4,854
	95	5,101	0	0	250	5,351	505	5,856
Marines	96	165,625	27	0	0	165,652	90,541	256,193
	95	362,188	47	0	3	362,238	164,849	527,087
Navy	96	580,435	5,450	0	23,775	609,660	220,781	830,441
	95	691,954	11,537	0	257	703,748	150,279	854,027
Army Corps of Engineers	96	3,910	300	0	5,000	9,210	0	9,210
	95	3,120	255	0	19,000	22,375	0	22,375
Dept. of Agriculture	96	10	0	0	605,470	605,480	0	605,480
	95	0	0	0	481,120	481,120	0	481,120
Dept. of Energy	96	196,948	27,461	505,541	10,687	740,637	1,174	741,811
	95	203,097	10,782	325,751	42,277	581,907	2,501	584,408
Dept. of Health and Human Services	96	0	0	0	0	0	750	750
	95	0	0	0	0	0	0	0
Dept. of Interior	96	750	4,017	0	5	4,772	0	4,772
	95	750	4,086	0	0	4,836	0	4,836
Dept. of Justice	96	10,305	1,300	0	0	11,605	0	11,605
	95	19,510	13,000	0	0	32,510	0	32,510
Dept. of Transportation	96	19,600	0	0	0	19,600	1,096	20,696
	95	16,499	0	0	0	16,499	4,544	21,043
Dept. of Treasury	96	280	107	0	56,900	57,287	9,350	66,637
	95	7,670	0	0	30,000	37,670	34,050	71,720
Dept. of Veterans Affairs	96	No reports received						
	95	0	0	0	0	0	0	0
Environmental Protection Agency	96	17	0	0	0	17	0	17
	95	11	0	0	0	11	0	11
National Aeronautics and Space Admi	96	327,182	0	0	0	327,182	320	327,502
	95	473,974	0	0	5	473,979	14,934	488,913
Tennessee Valley Authority	96	335	9,736	0	0	10,071	0	10,071
	95	13,620	0	0	0	13,620	0	13,620
U.S. Enrichment Corporation	96	674,953	251	0	0	675,204	230	675,434
	95	674,098	1,320	0	340	675,758	0	675,758
Total for Federal Facilities	96	4,294,841	384,602	505,541	704,867	5,889,851	612,797	6,502,648
	95	6,025,046	388,541	325,751	1,062,633	7,801,971	853,704	8,655,675

Note: On-site Releases from Section 5 of Form R and Off-site Releases from Section 6 (transfers off-site to disposal) of Form R.



Chapter 10 — TRI Data for Federal Facilities

Table 10-13. TRI Other On-site Waste Management, 1995-1996: Federal Facilities

Agency	Year	Recycled On-site Pounds	Energy Recovery On-site Pounds	Treated On-site Pounds	Total Other On-site Waste Management Pounds
Dept. of Defense	96	11,378,222	7,700	9,003,084	20,389,006
	95	34,709,104	13,084	12,489,922	47,212,110
Air Force	96	61,738	0	232,362	294,100
	95	117,680	84	255,475	373,239
Army	96	10,109,100	7,700	8,593,120	18,709,920
	95	34,097,968	13,000	12,013,462	46,124,430
Defense Logistics Agency	96	1,184,803	0	0	1,184,803
	95	436,000	0	0	436,000
Marines	96	0	0	0	0
	95	9,224	0	406	9,630
Navy	96	22,581	0	177,602	200,183
	95	48,232	0	220,579	268,811
Army Corps of Engineers	96	0	0	1,575	1,575
	95	0	0	350	350
Dept. of Agriculture	96	0	0	57,600	57,600
	95	0	0	46,300	46,300
Dept. of Energy	96	362,585	0	369,847	732,432
	95	307,661	0	383,490	691,151
Dept. of Health and Human Services	96	0	0	43,000	43,000
	95	0	0	44,668	44,668
Dept. of Interior	96	0	0	0	0
	95	0	0	0	0
Dept. of Justice	96	0	0	0	0
	95	0	0	0	0
Dept. of Transportation	96	0	0	0	0
	95	0	0	0	0
Dept. of Treasury	96	0	0	120	120
	95	0	0	2,330	2,330
Dept. of Veterans Affairs	96	No reports received			
	95	0	0	0	0
Environmental Protection Agency	96	0	0	0	0
	95	0	0	0	0
National Aeronautics and Space Admin.	96	429,110	0	78	429,188
	95	626,351	0	70	626,421
Tennessee Valley Authority	96	0	0	52,500	52,500
	95	0	0	62,576	62,576
U.S. Enrichment Corporation	96	0	0	122,400	122,400
	95	0	0	37,700	37,700
Total for Federal Facilities	96	12,169,917	7,700	9,650,204	21,827,821
	95	35,643,116	13,084	13,067,406	48,723,606

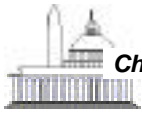
Note: Data from Section 8 of Form R. See corrected data in Box 10-2.



Table 10-14. TRI Transfers Off-site for Further Waste Management, 1995-1996: Federal Facilities

Agency	Year	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs Pounds	Other Off-site Transfers Pounds	Total Transfers Off-site for Further Waste Management Pounds
Dept. of Defense	96	4,566,374	295,346	566,657	58,461	0	5,486,838
	95	5,888,229	401,482	871,491	23,267	0	7,184,469
Air Force	96	152,142	70,479	129,132	29,496	0	381,249
	95	503,454	125,177	147,464	1,311	0	777,406
Army	96	3,855,274	65,314	293,964	6,432	0	4,220,984
	95	3,376,650	103,874	560,458	3,581	0	4,044,563
Defense Logistics Agency	96	0	0	0	0	0	0
	95	0	0	2,287	0	0	2,287
Marines	96	95,622	105,415	86,184	1,015	0	288,236
	95	276,165	36,800	75,251	1,275	0	389,491
Navy	96	463,336	54,138	57,377	21,518	0	596,369
	95	1,731,960	135,631	86,031	17,100	0	1,970,722
Army Corps of Engineers	96	0	0	0	180	0	180
	95	0	0	0	325	0	325
Dept. of Agriculture	96	0	0	0	250	0	250
	95	0	0	0	0	0	0
Dept. of Energy	96	28,771	0	2,240	0	0	31,011
	95	93,535	0	7,320	0	0	100,855
Dept. of Health and Human Services	96	0	0	0	0	0	0
	95	54,509	0	603	0	0	55,112
Dept. of Interior	96	0	0	0	0	0	0
	95	20,979	0	4,852	0	0	25,831
Dept. of Justice	96	0	0	0	0	0	0
	95	0	0	0	0	0	0
Dept. of Transportation	96	0	0	0	0	0	0
	95	0	1,517	282	0	0	1,799
Dept. of Treasury	96	13,742,428	0	5	775	0	13,743,208
	95	14,603,963	0	0	540	0	14,604,503
Dept. of Veterans Affairs	96	No reports received					
	95	0	0	0	91,000	0	91,000
Environmental Protection Agency	96	0	0	0	0	0	0
	95	0	0	0	0	0	0
National Aeronautics and Space Admin	96	215,930	8,755	21,435	1	0	246,121
	95	31,669	19,413	12,075	0	0	63,157
Tennessee Valley Authority	96	0	0	0	12,226	0	12,226
	95	0	0	0	0	0	0
U.S. Enrichment Corporation	96	0	0	0	0	0	0
	95	0	0	0	0	0	0
Total for Federal Facilities	96	18,553,503	304,101	590,337	71,893	0	19,519,834
	95	20,692,884	422,412	896,623	115,132	0	22,127,051

Note: Transfers Off-site for Further Waste Management from Section 6 (excluding transfers off-site to disposal) of Form R.



the winter weather. The colder the winter, the more that is used and subsequently injected underground.

The Department of Agriculture (USDA) Research Service in Clay Center, Nebraska, reported an increase in on-site land releases of ammonia of 124,000 pounds, from 403,000 in 1995 to 527,000 pounds in 1996. The reporting by this USDA facility highlights the effects of Executive Order 12856. Almost all of the reported releases arise from application of anhydrous ammonia as a fertilizer for corn. These releases make the Clay Center facility one of the top facilities in Nebraska for total on- and off-site releases. Department of Agriculture facilities, like many other Federal facilities, do not operate in the manufacturing sectors (SIC codes 20 to 39) that are subject to TRI reporting. If these facilities were in the private sector, their releases would not be reported to TRI because agricultural facilities generally are not covered under TRI. To provide the public with some information on non-reportable sources of TRI chemical releases, such as the application of fertilizers, EPA has included a discussion of diffuse sources in Chapter 2.

Three U.S. Air Force Bases reported the largest decreases in total on- and off-site releases among Federal facilities. Elmendorf Air Force Base in Alaska reported 481,000 pounds of ethylene glycol released on-site to land in 1995. It did not report for 1996 because it now uses propylene glycol instead. Tinker Air Force Base in Oklahoma reported the second largest decrease, of 173,000 pounds of air emissions of dichloromethane. This facility reported 546,000 pounds in 1995 and 373,000 pounds in 1996. A third Air Force base, Robins Air Force Base in Georgia also reported decreases of air emissions of dichloromethane, from 254,000 pounds in 1995 to 134,000 pounds in 1996, a decrease of 120,000. Robins Air Force Base and Tinker Air Force Base achieved these reductions through source reduction programs. Tinker Air Force Base is in the process of implementing a detailed pollution prevention plan that targets TRI chemicals for significant reductions through the application of process changes and new technology.

The chemical dichloromethane is used primarily in paint stripping of aircraft and aircraft parts, but also in degreasing and the cleaning of bearings. The installation of the Aircraft Component Stripping high pressure water jet system has significantly reduced chemicals used for paint stripping, and dichloromethane has been eliminated for bearing-cleaning operations through the use of an aqueous cleaning process. Additional reductions have been achieved since 1996 through the use of Environmentally Acceptable Strippers for aircraft paint stripping operations. Robins Air Force Base uses a baking soda high pressure water system to limit its use of chemical paint strippers.

1995-1996 Waste Management Data for Federal Facilities

Table 10-15 summarizes on- and off-site waste management data for Federal facilities for 1995 and 1996. As before, Box 10-2, presented above, provides corrected data for this table, taking into account the effect of one facility's error in reporting of on-site waste management. The following discussion reflects the data in Box 10-2.

Total production-related waste remained about the same from 1995 to 1996 for Federal facilities. However, all types of waste management activity showed decreases except on-site recycling. Off-site waste management decreased a total of 2.6 million pounds, or 12.0%. Quantities released on- and off-site also had reductions of 2.3 million pounds, or 26.7%.

Facilities with Large Increases and Decreases in Waste Management, 1995-1996

The U.S. Defense Logistics Agency in Richmond, Virginia, reported increases for four CFCs and Halons in on-site recycling. On-site recycling for the four was 436,000 pounds in 1995 and 1.2 million pounds in 1996, an increase of 749,000 pounds. This facility is the Federal reserve for ozone-depleting substances for all Department of Defense facilities. The facility receives the substances, recycles them, and returns them for



reuse. The facility's mission is to increase the amount of ozone-depleting substances received and recycled. Increases in on-site recycling are anticipated over the next few years until such substances are completely phased out. This program was initiated in late 1994. The second largest reported increase was from the U.S. Army's Lake City Ammunition plant in Independence, Missouri, which reported off-site recycling of copper of 1.3 million pounds in 1995 and 1.6 million pounds in 1996, an increase of 337,000 pounds. The facility with the third largest increase was the U.S. Mint in Philadelphia, Pennsylvania, which reported 3.5 million pounds of copper recycled off-site in 1995 and 3.8 million pounds in 1996, an increase of 300,000 pounds.

The Philadelphia Naval Shipyard in Philadelphia, Pennsylvania, reported the largest decrease with an overall reduction of 1.5 million pounds from 1995 to 1996. In 1995, this facility, which consisted of both a shipyard and a foundry, reported 1.5 million pounds of copper recycled off-site. In 1996, the shipyard closed, but the foundry remains in operation. The amount of copper reported as recycled off-site in 1996 was 150,000 pounds.

The facility with the largest decrease in waste management was the U.S. Mint in Denver, Colorado. This Department of the Treasury facility reported 8.7 million pounds of copper recycled off-site in 1995 and 7.7 million pounds in 1996, a reduction of 1.0 million pounds. The Denver Mint attributes this reduction to a decrease in production of nickels, which are made with a copper core.

Other Apparent Increases and Decreases in Waste Management, 1995-1996

In the TRI database, there are other facilities with large apparent increases and decreases, which have been identified as reporting errors or changes. There is one such Federal facility:

U.S. Army Ammunition Plant, Radford, Virginia, decrease of 27.1 million pounds, reporting error (see Box 10-3).

1994-1996 TRI Data for Federal Facilities

Federal facilities have been required to report to TRI since the 1994 reporting year. (While some facilities, most notably in the Department of Energy, began reporting in 1993, some facilities did not submit reports until 1995.) Industry-specific chapters in this public data release analyze TRI reporting from 1988, TRI's baseline year, to 1996. They also review waste management data since 1991, the year that TRI began collecting this information, through 1996. Because Federal-facility reporting does not cover these longer periods, this section compares data from 1994 to 1996 only.

Multi-year comparisons of TRI data rely on the list of "core" TRI chemicals that were reportable, with the same reporting definition, in all years. For the years 1994 through 1996, in addition to delisted chemicals, this set of chemicals excludes the chemicals added in 1995 and also ammonia, hydrochloric acid, and sulfuric acid because of changes in their reporting definitions. These analyses also cover only the data elements that were collected in all years, which excludes from this section any analysis that distinguishes RCRA subtitle C landfills from other land releases as well as analysis based on the types of underground injection wells.

On- and Off-site Releases

From 1994 to 1996, the number of Federal facilities reporting to TRI decreased from 172 to 122, a 29.1% decrease, as shown in Table 10-16. The number of forms submitted dropped from 611 to 341, a 44.2% decrease. More than three-quarters of this decrease (233 forms out of 270 forms) was due to Department of Defense facilities. The Department of Defense credits much of this decrease to reductions in the use of TRI chemicals achieved through its agency-wide policy of source reduction. In addition, three major Navy facilities closed and three private contractor-operated

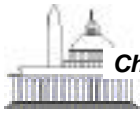


Table 10-15. TRI Waste Management Data, 1995-1996: Federal Facilities

Waste Management Activity	1995	1996	Change from 1995-1996	
	Pounds	Pounds	Pounds	Percent
<u>On-site Waste Management</u>				
Recycled On-site	35,643,116	12,169,917	-23,473,199	-65.9
Energy Recovery On-site	13,084	7,700	-5,384	-41.1
Treated On-site	13,067,406	9,650,204	-3,417,202	-26.2
Total On-site Waste Management	48,723,606	21,827,821	-26,895,785	-55.2
<u>Off-site Waste Management</u>				
Recycled Off-site	20,642,592	18,483,313	-2,159,279	-10.5
Energy Recovery Off-site	474,708	345,574	-129,134	-27.2
Treated Off-site	990,294	630,355	-359,939	-36.3
Total Off-site Waste Management	22,107,594	19,459,242	-2,648,352	-12.0
Quantity Released On- and Off-site	8,602,631	6,304,755	-2,297,876	-26.7
Total Production-related Waste	79,433,831	47,591,818	-31,842,013	-40.1
Non- Production-related Waste	178,390	107,763	-70,627	-39.6

Note: Data from Section 8 of Form R (Current Year, Column B) of year indicated. See corrected on-site waste management data in Box 10-2.

facilities closed or were mothballed between 1994 and 1996.

Total on- and off-site releases reported by Federal facilities, also presented in Table 10-16, decreased by half (50.4%) during this period, from 11.0 million pounds to 5.4 million pounds. Air emissions, which were the largest release type in all three years, also decreased by half (50.7%), from 8.3 million pounds to 4.1 million pounds. In 1994, releases to air reported by Federal facilities were divided about equally between fugitive and point source emissions. By 1996, however, this had changed. From 1994 to 1996, fugitive air emissions decreased 44.3% and point source air emissions decreased 57.3%, compared to 1994 reporting. As a result, fugitive air emissions of 2.4 million pounds in 1996 represented a larger proportion (57.5%) of the Federal facilities' air releases.

Other types of on-site releases reported by Federal facilities increased from 1994 to 1996, although the amounts remained well below 1 million pounds in

each category. These were a 12.7% increase in surface water discharges, 58.8% increase in underground injection, and 39.7% increase in on-site land releases. Off-site releases (transfers to disposal), however, decreased by 71.7% from 2.2 million pounds to 613,000 pounds. These data also appear in Table 10-16 and they are illustrated in Figure 10-11.

Table 10-17 provides 1994-1996 data for on- and off-site releases for each Federal agency. The largest reductions were reported by the Air Force (2.9 million pounds, a decrease of 59.7%) and the Army (1.3 million pounds, a decrease of 66.9%). For the Air Force, most of the overall decrease was in air emissions (2.6 million pounds). For the Army, the largest reduction was in off-site releases (740,000 pounds transferred to disposal), followed by air emissions (518,000 pounds). The largest increase was 120,000 pounds (21.4%) by Department of Energy facilities, principally in underground injection.



Table 10-16. Comparison of TRI On-site and Off-site Releases, Other On-site Waste Management, and Transfers for Further Waste Management, 1994-1996: Federal Facilities

	1994 Number	1995 Number	1996 Number	Change 1994 to 1996 Percent
Total Facilities	172	139	122	-29.1
Total Forms	611	419	341	-44.2
Form Rs	611	399	314	-48.6
Form As	NA	20	27	—
	Pounds	Pounds	Pounds	Percent
<u>On-site Releases</u>				
Total Air Emissions	8,315,612	5,715,738	4,098,880	-50.7
Fugitive Air	4,237,122	2,685,945	2,358,622	-44.3
Point Source Air	4,078,490	3,029,793	1,740,258	-57.3
Surface Water	109,999	79,721	123,962	12.7
Underground Injection	318,318	325,751	505,541	58.8
On-site Land Releases	71,129	581,513	99,383	39.7
Total On-site Releases	8,815,058	6,702,723	4,827,766	-45.2
<u>Off-site Releases</u>				
Transfers Off-site to Disposal	2,163,898	849,290	612,567	-71.7
Total On- and Off-site Releases	10,978,956	7,552,013	5,440,333	-50.4
<u>Other On-site Waste Management</u>				
Recycled On-site	1,995,164	35,643,116	12,167,717	509.9
Energy Recovery On-site	633,190	13,084	7,700	-98.8
Treated On-site	2,504,525	12,566,460	9,312,954	271.8
Total Other On-site Waste Management	5,132,879	48,222,660	21,488,371	318.6
<u>Transfers Off-site for Further Waste Management</u>				
Transfers to Recycling	18,296,314	20,635,425	18,524,539	1.2
Transfers to Energy Recovery	597,731	419,412	304,101	-49.1
Transfers to Treatment	1,769,843	891,471	589,916	-66.7
Transfers to POTWs	232,151	112,422	37,528	-83.8
Other Off-site Transfers	1,700	0	0	-100.0
Total Transfers Off-site for Further Waste Management	20,897,739	22,058,730	19,456,084	-6.9

Note: Does not include delisted chemicals, chemicals added in 1995, and ammonia, hydrochloric acid, and sulfuric acid. **On-site Releases** from Section 5 of Form R and **Off-site Releases** from Section 6 (transfers off-site to disposal) of Form R. **Other On-site Waste Management** from Section 8 of Form R. **Transfers Off-site for Further Waste Management** from Section 6 (excluding transfers off-site to disposal) of Form R. Breakdown of Underground Injection and On-site Land Releases not required before 1996. Other Off-site Transfers are transfers reported without a valid waste management code.

NA: not required to be reported in that year. See **corrected data in Box 10-3**.

Other On-site Waste Management

Table 10-16 also provides data on Federal facilities' reporting of other on-site waste management from 1994 to 1996. Box 10-3 supplies corrected data for this table, taking into account the effect of an error in reporting for on-site recycling in 1994 and 1995 and for on-site treatment in 1994. The following discussion is based on the information shown in Box 10-3. The overall change was a decrease from 34.3 million pounds in 1994 to

21.5 million pounds in 1996. This was a decrease of 37.4%. This was the result of a decrease of 12.8 million pounds (51.3% decrease) in on-site recycling. On-site treatment showed an increase of 7.0%, from 8.7 million pounds in 1994 to 9.3 million pounds in 1996.

Other on-site waste management data for the individual agencies, for the 1994-1996 period, appear in Table 10-18. Box 10-3 supplies corrected

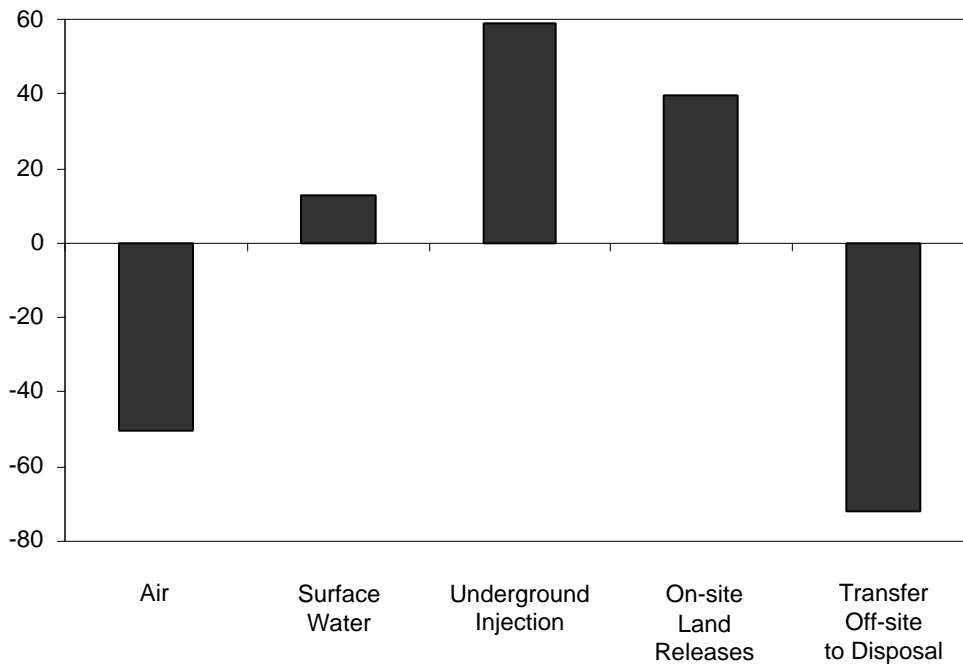
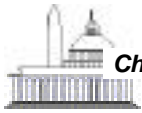


Figure 10-11. Percentage Change in On-site and Off-site Releases, 1994-1996: Federal Facilities

Note: Does not include delisted chemicals, chemicals added in 1995, and ammonia, hydrochloric acid, and sulfuric acid. **On-site Releases** from Section 5 of Form R and **Off-site Releases** from Section 6 (transfers off-site to disposal) of Form R. Breakdown of On-site Land Releases and Underground Injection not required before 1996.

data for this table, taking into account the effect of an error in reporting by one Army facility. The largest decrease was reported by the Army, a reduction of 11.5 million pounds (or 38.3%), from 1994 to 1996. Most of this reduction was reported in on-site recycling. The largest reported increase was that of the Defense Logistics Agency, an increase of 606,000 pounds (or 104.6%), resulting from an increase in on-site recycling.

Transfers Off-site for Further Waste Management

From 1994 to 1996, Federal facilities' reporting of transfers off-site for further waste management decreased 6.9%, from 20.9 million pounds to 19.5 million pounds. The large majority of this reporting was in transfers to recycling, which increased slightly (1.2%), from 18.3 million pounds to 18.5

million pounds. All other types of off-site transfers decreased. These data also appear in Table 10-16.

Table 10-19 provides data for the Federal agencies on transfers off-site for further waste management. Army facilities reported the largest reduction, a decrease of 1.8 million pounds, or 30.1%, from 1994 to 1996. Facilities of the Department of the Treasury reported the largest increase, 1.0 million pounds, or 8.2%.

Facilities with Large Increases and Decreases in Releases, 1994-1996

The Federal facility with the largest increase in total on- and off-site releases was U.S. Department of Energy Naval Petroleum Reserves of California



Table 10-17. TRI On-site and Off-site Releases, by Agency, 1994-1996: Federal Facilities

Agency	Year	On-site Releases				Total On-site Releases Pounds	Off-site Releases Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
		Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds			
Dept. of Defense	96	2,943,461	102,485	0	26,805	3,072,751	599,877	3,672,628
	95	4,391,417	57,555	0	489,891	4,938,863	795,321	5,734,184
	94	6,682,870	64,910	1	41,186	6,788,967	2,046,943	8,835,910
Air Force	96	1,809,856	87,366	0	41	1,897,263	80,029	1,977,292
	95	2,731,753	34,748	0	486,507	3,253,008	285,256	3,538,264
	94	4,380,750	15,337	0	20,677	4,416,764	487,215	4,903,979
Army	96	408,091	9,642	0	2,989	420,722	208,526	629,248
	95	640,421	11,223	0	2,874	654,518	194,432	848,950
	94	926,237	12,513	1	14,829	953,580	948,858	1,902,438
Defense Logistics Agency	96	4,854	0	0	0	4,854	0	4,854
	95	5,101	0	0	250	5,351	505	5,856
	94	31,707	0	0	0	31,707	0	31,707
Marines	96	140,225	27	0	0	140,252	90,541	230,793
	95	322,188	47	0	3	322,238	164,849	487,087
	94	450,845	1,027	0	3,880	455,752	460,134	915,886
Navy	96	580,435	5,450	0	23,775	609,660	220,781	830,441
	95	691,954	11,537	0	257	703,748	150,279	854,027
	94	893,331	36,033	0	1,800	931,164	150,736	1,081,900
Army Corps of Engineers	96	3,910	300	0	5,000	9,210	0	9,210
	95	3,110	255	0	19,000	22,365	0	22,365
	94	3,410	1,600	0	17,300	22,310	0	22,310
Dept. of Agriculture	96	0	0	0	0	0	0	0
	95	0	0	0	0	0	0	0
	94	No reports received						
Dept. of Energy	96	155,452	5,803	505,541	10,678	677,474	1,174	678,648
	95	140,969	3,542	325,751	42,277	512,539	2,501	515,040
	94	220,764	3,766	318,317	12,273	555,120	3,848	558,968
Dept. of Health and Human Services	96	0	0	0	0	0	750	750
	95	0	0	0	0	0	0	0
	94	500	0	0	0	500	60,622	61,122
Dept. of Interior	96	750	4,017	0	0	4,767	0	4,767
	95	750	4,086	0	0	4,836	0	4,836
	94	1,161	0	0	0	1,161	0	1,161
Dept. of Justice	96	10,305	1,300	0	0	11,605	0	11,605
	95	19,510	13,000	0	0	32,510	0	32,510
	94	79,360	13,000	0	0	92,360	0	92,360
Dept. of Transportation	96	19,600	0	0	0	19,600	1,096	20,696
	95	16,499	0	0	0	16,499	4,544	21,043
	94	23,566	0	0	250	23,816	1,541	25,357
Dept. of Treasury	96	30	107	0	56,900	57,037	9,350	66,387
	95	7,410	0	0	30,000	37,410	34,050	71,460
	94	6,310	0	0	20	6,330	37,000	43,330
Dept. of Veterans Affairs	96	No reports received						
	95	0	0	0	0	0	0	0
	94	No reports received						
Environmental Protection Agency	96	17	0	0	0	17	0	17
	95	11	0	0	0	11	0	11
	94	20	0	0	0	20	0	20

Note: Does not include delisted chemicals, chemicals added in 1995, and ammonia, hydrochloric acid, and sulfuric acid. **On-site Releases** from Section 5 of Form R and **Off-site Releases** from Section 6 (transfers off-site to disposal) of Form R.

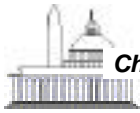


Table 10-17. TRI On-site and Off-site Releases, by Agency, 1994-1996: Federal Facilities, Continued

Agency	Year	On-site Releases				Total On-site Releases Pounds	Off-site Releases Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
		Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds			
National Aeronautics and Space Admin.	96	327,172	0	0	0	327,172	320	327,492
	95	473,964	0	0	5	473,969	12,874	486,843
	94	546,899	2,236	0	18	549,153	13,944	557,397
National Security Agency	96	No reports received						
	95	No reports received						
	94	0	0	0	0	0	0	0
Tennessee Valley Authority	96	0	9,736	0	0	9,736	0	9,736
	95	0	0	0	0	0	0	0
	94	0	23,704	0	21	23,725	0	23,725
U.S. Enrichment Corporation	96	638,183	214	0	0	638,397	0	638,397
	95	662,098	1,283	0	340	663,721	0	663,721
	94	750,752	783	0	61	751,596	0	751,596
Total for Federal Facilities	96	4,098,880	123,962	505,541	99,383	4,827,766	612,567	5,440,333
	95	5,715,738	79,721	325,751	581,513	6,702,723	849,290	7,552,013
	94	8,315,612	109,999	318,318	71,129	8,815,058	2,163,898	10,978,956

Note: Does not include delisted chemicals, chemicals added in 1995, and ammonia, hydrochloric acid, and sulfuric acid. On-site Releases from Section 5 of Form R and Off-site Releases from Section 6 (transfers off-site to disposal) of Form R.

in Tupman, California. Reporting of methanol has varied, with 308,000 pounds injected underground in 1994, 184,000 pounds in 1995, and 499,000 pounds in 1996. As described above for 1995-to-1996 increases, methanol is used at this facility as an antifreeze so that the amount used and subsequently injected underground varies depending on winter temperatures. The facility with the second largest increase was the U.S. Navy facility in San Diego, California, with 98,000 pounds of aluminum oxide (fibrous forms) transferred off-site to disposal in 1996 and no reports for this chemical in 1994. Aluminum oxide is used as a grit for paint removal and is collected and disposed of along with paint chips.

The Tinker Air Force Base in Oklahoma reported the largest decrease of total releases from 1994 to 1996. This facility reported air emissions of dichloromethane of 857,000 pounds in 1994, 546,000 pounds in 1995, and 373,000 pounds in 1996. As described above for 1995-to-1996 decreases, this was achieved through its source reduction program. The U.S. Army Arsenal in Pine Bluff, Arkansas, reported the second largest decrease, with 348,000 pounds of transfers to disposal of both hexachloroethane and zinc

compounds in 1994, and no reports for these chemicals in 1996. A second U.S. Air Force Base, in Marietta, Georgia, reported a decrease of 187,000 pounds of methyl ethyl ketone, from 192,000 pounds to 5,000 pounds, in air emissions. It also reported 136,000 pounds in transfers to disposal of manganese compounds in 1994 and no report for this chemical in 1996. Methyl ethyl ketone (MEK) had been used by many at this facility as a paint gun cleaner and general cleaning solvent on aircraft. Strict controls on the distribution of MEK were created, resulting in a reduction in use and the consequent reduction in reported air emissions. During a reclamation project at the base, soils containing naturally occurring manganese compounds were dug up and removed. The manganese compounds in the soil were reported to TRI. This project was completed before the 1996 reporting year.

1994-1996 Waste Management Data for Federal Facilities

Table 10-20 summarizes on- and off-site waste management data for Federal facilities from 1994 to 1996. Box 10-3 supplies corrected data for this


Box 10-3. Corrected On-site Waste Management Quantities, 1994-1996: Federal Facilities

One federal Army facility did not submit a report for 1994. The form from this facility for nitric acid for 1995 indicates large amounts of this chemical were recycled on-site and treated on-site in 1994 (under the prior year reporting column). In addition, the facility reported a number 10 times smaller for the recycled on-site amount for 1995 on the 1996 form (under the prior year reporting column) than it did on the 1995 form. Correcting for these errors would result in the following data.

Corrected Data for Table 10-16 and Table 10-20

Waste Management Activity	1994 Pounds	1995 Pounds	1996 Pounds	Change 1994 to 1996 Percent
<u>Other On-site Waste Management</u>				
Recycled On-site	24,995,164	5,043,116	12,167,717	-51.3
Energy Recovery On-site	633,190	13,084	7,700	-98.8
Treated On-site	8,704,525	12,566,460	9,312,954	7.0
Total Other On-site Waste Management	34,332,879	17,622,660	21,488,371	-37.4
Total Production-related Waste	65,492,432	47,134,174	46,112,296	
Waste Management Activity	Change 1994-1995 Percent	Change 1995-1996 Percent	Change 1994-1996 Percent	
<u>Other On-site Waste Management</u>				
Recycled On-site	-79.8	141.3	-51.3	
Energy Recovery On-site	-97.9	-41.1	-98.8	
Treated On-site	44.4	-25.9	7.0	
Total Other On-site Waste Management	-48.7	21.9	-37.4	
Total Production-related Waste	-28.0	-2.2	-29.6	

Corrected Data for Table 10-18

Agency	Year	Recycled On-site Pounds	Energy Recovery On-site Pounds	Total Treated On-site Pounds	Total On-site Waste Management Pounds
Dept. of Defense	96	11,376,022	7,700	8,891,254	20,274,976
	95	4,109,104	13,084	11,714,032	15,836,220
	94	24,182,837	633,190	6,872,812	31,688,839
Army	96	10,106,900	7,700	8,483,690	18,598,290
	95	3,497,968	13,000	11,714,032	15,225,000
	94	23,230,686	17,000	6,872,812	30,120,498

Note: Data from Section 8 of Form R. One form added for 1994 (23,000,000 pounds recycled on-site and 6,200,000 pounds treated on-site). One form corrected for 1995 (from 34,000,000 pounds to 3,400,000 pounds recycled on-site).

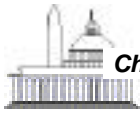


Table 10-18. TRI Other On-site Waste Management by Agency, 1994-1996: Federal Facilities

Agency	Year	Recycled On-site Pounds	Energy Recovery On-site Pounds	Treated On-site Pounds	Total Other On-site Waste Management Pounds
Dept. of Defense	96	11,376,022	7,700	8,891,254	20,274,976
	95	34,709,104	13,084	12,175,092	46,897,280
	94	1,182,837	633,190	2,071,494	3,887,521
Air Force	96	61,738	0	229,962	291,700
	95	117,680	84	240,075	357,839
	94	281,873	0	933,958	1,215,831
Army	96	10,106,900	7,700	8,483,690	18,598,290
	95	34,097,968	13,000	11,714,032	45,825,000
	94	230,686	17,000	672,812	920,498
Defense Logistics Agency	96	1,184,803	0	0	1,184,803
	95	436,000	0	0	436,000
	94	532,560	0	46,563	579,123
Marines	96	0	0	0	0
	95	9,224	0	406	9,630
	94	85,538	128,100	8,527	222,165
Navy	96	22,581	0	177,602	200,183
	95	48,232	0	220,579	268,811
	94	52,180	488,090	409,634	949,904
Army Corps of Engineers	96	0	0	1,575	1,575
	95	0	0	350	350
	94	0	0	1,450	1,450
Dept. of Agriculture	96	0	0	57,600	57,600
	95	0	0	46,300	46,300
	94	No reports received			
Dept. of Energy	96	362,585	0	208,427	571,012
	95	307,661	0	226,374	534,035
	94	104,137	0	302,934	407,071
Dept. of Health and Human Services	96	0	0	43,000	43,000
	95	0	0	44,668	44,668
	94	0	0	11,000	11,000
Dept. of Interior	96	0	0	0	0
	95	0	0	0	0
	94	0	0	4,430	4,430
Dept. of Justice	96	0	0	0	0
	95	0	0	0	0
	94	0	0	0	0
Dept. of Transportation	96	0	0	0	0
	95	0	0	0	0
	94	0	0	0	0
Dept. of Treasury	96	0	0	120	120
	95	0	0	2,330	2,330
	94	0	0	2,205	2,205
Dept. of Veterans Affairs	96	No reports received			
	95	0	0	0	0
	94	No reports received			

Note: Does not include delisted chemicals, chemicals added in 1995, and ammonia, hydrochloric acid, and sulfuric acid. Data from Section 8 of Form R. See corrected data in Box 10-3.



Table 10-18. TRI Other On-site Waste Management by Agency, 1994-1996: Federal Facilities, Continued

Agency	Year	Recycled On-site Pounds	Energy Recovery On-site Pounds	Treated On-site Pounds	Total Other On-site Waste Management Pounds
Environmental Protection Agency	96	0	0	0	0
	95	0	0	0	0
	94	0	0	0	0
National Aeronautics and Space Admin	96	429,110	0	78	429,188
	95	626,351	0	70	626,421
	94	707,690	0	712	708,402
National Security Agency	96	No reports received			
	96	No reports received			
	94	0	0	12,500	12,500
Tennessee Valley Authority	96	0	0	52,500	52,500
	95	0	0	62,576	62,576
	94	0	0	35,000	35,000
U.S. Enrichment Corporation	96	0	0	58,400	58,400
	95	0	0	8,700	8,700
	94	0	0	62,800	62,800
Total for Federal Facilities	96	12,167,717	7,700	9,312,954	21,488,371
	95	35,643,116	13,084	12,566,460	48,222,660
	94	1,995,164	633,190	2,504,525	5,132,879

Note: Does not include delisted chemicals, chemicals added in 1995, and ammonia, hydrochloric acid, and sulfuric acid. Data from Section 8 of Form R. See **corrected data in Box 10-3**.

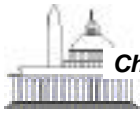
table, taking into account the effect of an error in reporting for quantities recycled on-site in 1994 and 1995 and treated on-site in 1994. The following discussion is based on the information shown in Box 10-3. Total production-related waste decreased from 65.5 million pounds to 46.1 million pounds in this period, a decrease of 29.6%. As noted above, on-site waste management showed a decrease, from 34.3 million pounds to 21.5 million pounds, or 37.4%. Federal facilities' reporting of off-site waste management decreased from 20.7 million pounds to 19.4 million pounds, or 6.4%. Quantities released on- and off-site decreased by half (50.0%), from 10.4 million pounds to 5.2 million pounds.

Facilities with Large Increases and Decreases in Waste Management, 1994-1996

The U.S. Defense Logistics Agency in Richmond, Virginia, reported increases for four CFCs and Halons in on-site recycling as part of its on-going operations as the Federal reserve for ozone-

depleting substances, described above for the 1995-to-1996 increases. On-site recycling for the four was 533,000 pounds in 1994, 436,000 pounds in 1995, and 1.2 million pounds in 1996, an increase of 652,000 pounds from 1994 to 1996. The facility with the second largest increase was the U.S. Mint in Denver, Colorado, with increases in off-site recycling of copper from 7.3 million pounds in 1994 to 7.7 million pounds in 1996. However, as described above, this is a decrease from the 1995 amount of 8.7 million pounds. The facility with the third largest increase was the U.S. Mint in Philadelphia, Pennsylvania, which reported 3.5 million pounds of copper recycled off-site in both 1994 and 1995 and 3.8 million pounds in 1996, an increase of 300,000 pounds, also described above.

The facility with the largest decrease in waste from 1994 to 1995 was the Tinker Air Force Base in Oklahoma, with decreases in dichloromethane of quantities released on- and off-site of 485,000 pounds, from 863,000 pounds in 1994 to 378,000 pounds in 1996. This facility accounts for the



Chapter 10 — TRI Data for Federal Facilities

Table 10-19. TRI Transfers Off-site for Further Waste Management, by Agency, 1994-1996: Federal Facilities

Agency	Year	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs Pounds	Other Off-site Transfers Pounds	Total Transfers Off-site for Further Waste Management Pounds
Dept. of Defense	96	4,558,899	295,346	566,407	24,346	0	5,444,998
	95	5,885,549	401,482	871,491	20,557	0	7,179,079
	94	5,493,409	582,593	1,681,620	185,996	1,450	7,945,068
Air Force	96	144,667	70,479	129,132	596	0	344,874
	95	500,774	125,177	147,464	1,311	0	774,726
	94	285,896	225,789	265,695	116,267	1,450	895,097
Army	96	3,855,274	65,314	293,964	1,967	0	4,216,519
	95	3,376,650	103,874	560,458	1,621	0	4,042,603
	94	4,847,318	177,510	1,002,843	2,123	0	6,029,794
Defense Logistics Agency	96	0	0	0	0	0	0
	95	0	0	2,287	0	0	2,287
	94	0	7,100	8,630	0	0	15,730
Marines	96	95,622	105,415	85,934	265	0	287,236
	95	276,165	36,800	75,251	525	0	388,741
	94	62,073	98,500	99,881	61,534	0	321,988
Navy	96	463,336	54,138	57,377	21,518	0	596,369
	95	1,731,960	135,631	86,031	17,100	0	1,970,722
	94	298,122	73,694	304,571	6,072	0	682,459
Army Corps of Engineers	96	0	0	0	180	0	180
	95	0	0	0	325	0	325
	94	0	0	0	0	0	0
Dept. of Agriculture	96	0	0	0	0	0	0
	95	0	0	0	0	0	0
	94	No reports received					
Dept. of Energy	96	7,282	0	2,069	0	0	9,351
	95	59,735	0	7,020	0	0	66,755
	94	25,700	0	26,853	10	0	52,563
Dept. of Health and Human Services	96	0	0	0	0	0	0
	95	54,509	0	603	0	0	55,112
	94	25,401	0	19,460	34,415	0	79,276
Dept. of Interior	96	0	0	0	0	0	0
	95	0	0	0	0	0	0
	94	0	0	0	4,500	0	4,500
Dept. of Justice	96	0	0	0	0	0	0
	95	0	0	0	0	0	0
	94	0	0	0	0	0	0
Dept. of Transportation	96	0	0	0	0	0	0
	95	0	1,517	282	0	0	1,799
	94	0	3,554	998	0	250	4,802
Dept. of Treasury	96	13,742,428	0	5	775	0	13,743,208
	95	14,603,963	0	0	540	0	14,604,503
	94	12,693,820	0	0	6,980	0	12,700,800
Dept. of Veterans Affairs	96	No reports received					
	95	0	0	0	91,000	0	91,000
	94	No reports received					
Environmental Protection Agency	96	0	0	0	0	0	0
	95	0	0	0	0	0	0
	94	0	0	0	0	0	0

Note: Does not include delisted chemicals, chemicals added in 1995, and ammonia, hydrochloric acid, and sulfuric acid. **Transfers Off-site for Further Waste Management** from Section 6 (excluding transfers off-site to disposal) of Form R. Other Off-site Transfers are transfers reported without a valid waste management code.



Table 10-19. TRI Transfers Off-site for Further Waste Management, by Agency, 1994-1996: Federal Facilities

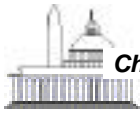
Agency	Year	Transfers to Recycling Pounds	Transfers to Energy Recovery Pounds	Transfers to Treatment Pounds	Transfers to POTWs Pounds	Other Off-site Transfers Pounds	Total Transfers Off-site for Further Waste Management Pounds
National Aeronautics and Space Admin.	96	215,930	8,755	21,435	1	0	246,121
	95	31,669	16,413	12,075	0	0	60,157
	94	57,984	11,584	13,808	250	0	83,626
National Security Agency	96	No reports received					
	95	No reports received					
	94	0	0	38	0	0	38
Tennessee Valley Authority	96	0	0	0	12,226	0	12,226
	95	0	0	0	0	0	0
	94	0	0	27,066	0	0	27,066
U.S. Enrichment Corporation	96	0	0	0	0	0	0
	95	0	0	0	0	0	0
	94	0	0	0	0	0	0
Total for Federal Facilities	96	18,524,539	304,101	589,916	37,528	0	19,456,084
	95	20,635,425	419,412	891,471	112,422	0	22,058,730
	94	18,296,314	597,731	1,769,843	232,151	1,700	20,897,739

Note: Does not include delisted chemicals, chemicals added in 1995, and ammonia, hydrochloric acid, and sulfuric acid. **Transfers Off-site for Further Waste Management** from Section 6 (excluding transfers off-site to disposal) of Form R. Other Off-site Transfers are transfers reported without a valid waste management code.

Table 10-20. TRI Waste Management Data, 1994-1996: Federal Facilities

Waste Management Activity	1994 Pounds	1995 Pounds	1996 Pounds
<u>On-site Waste Management</u>			
Recycled On-site	1,995,164	35,643,116	12,167,717
Energy Recovery On-site	633,190	13,084	7,700
Treated On-site	2,504,525	12,566,460	9,312,954
Total On-site Waste Management	5,132,879	48,222,660	21,488,371
<u>Off-site Waste Management</u>			
Recycled Off-site	18,051,026	20,580,092	18,454,324
Energy Recovery Off-site	558,744	471,708	345,574
Treated Off-site	2,102,577	961,194	595,560
Total Off-site Waste Management	20,712,347	22,012,994	19,395,458
Quantity Released On- and Off-site	10,447,206	7,498,520	5,228,467
Total Production-related Waste	36,292,432	77,734,174	46,112,296
Non- Production-related Waste	307,616	174,295	107,685
Waste Management Activity	Change 1994-1995 Percent	Change 1995-1996 Percent	Change 1994-1996 Percent
<u>On-site Waste Management</u>			
Recycled On-site	1,686.5	-65.9	509.9
Energy Recovery On-site	-97.9	-41.1	-98.8
Treated On-site	401.8	-25.9	271.8
Total On-site Waste Management	839.5	-55.4	318.6
<u>Off-site Waste Management</u>			
Recycled Off-site	14.0	-10.3	2.2
Energy Recovery Off-site	-15.6	-26.7	-38.2
Treated Off-site	-54.3	-38.0	-71.7
Total Off-site Waste Management	6.3	-11.9	-6.4
Quantity Released On- and Off-site	-28.2	-30.3	-50.0
Total Production-related Waste	114.2	-40.7	27.1
Non- Production-related Waste	-43.3	-38.2	-65.0

Note: Does not include delisted chemicals, chemicals added in 1995, ammonia, hydrochloric acid, and sulfuric acid. Data from Section 8 of Form R (Current Year, Column B) of year indicated. **See corrected data in Box 10-3.**



largest decreases in total releases for both 1994 to 1996 and 1995 to 1996, as described above. The facility attributes the reductions to process and equipment changes implemented as a result of its source reduction program. The U.S. Army Lake City Ammunition Plant in Independence, Missouri, reported the second largest decreases, with 2.3 million pounds of copper recycled off-site in 1994 and 1.6 million pounds in 1996, a decrease of 620,000 pounds. The facility reporting the third largest decreases in waste was the U.S. Army Arsenal in Pine Bluff, Arkansas, with 351,000 pounds of both hexachloroethane and zinc compounds released on and off-site in 1994 and 50 pounds of each in 1996. This decrease occurred from 1995 to 1996, as described above.

**Facilities Contacted For Explanations
(alphabetical by facility):**

U.S. Air Force, Elmendorf Air Force Base, Alaska:
Cheryl Paige, March 23, 1998 (explanation provided)

U.S. Air Force Plant, Marietta, Georgia: Rochelle
Routman, April 16, 1998 (explanation provided)

U.S. Air Force, Robins Air Force Base, Georgia:
Andrew Porth (Department of Defense), April 16,
1998 (explanation provided)

U.S. Air Force, Tinker Air Force Base, Oklahoma:
Anne Schaefer, March 25, 1998 (explanation
provided)

U.S. Army Arsenal, Pine Bluff, Arkansas (could not
be reached for comment)

U.S. Army Ammunition Plant, Radford, Virginia:
Shelley Barker, April 15, 1998 (explanation provided)

U.S. Army, Lake City Ammunition Plant,
Independence, Missouri (could not be reached for
comment)

U.S. Defense Logistics Agency, Richmond, Virginia:
Adrienne Moore and Ron Sibley, April 15, 1998
(explanation provided)

U.S. Department of Agriculture, Agricultural
Research Service, Clay Center, Nebraska: Glen
Becker, March 24, 1998 (explanation provided)

U.S. Department of Energy Naval Petroleum Reserves
of California, Tupman, California: Gary Walker, April
15, 1998 (explanation provided)

U.S. Mint, Denver, Colorado: Gail Fallon, April 20,
1998 (explanation provided)

U.S. Mint, Philadelphia, Pennsylvania (could not be
reached for comment)

U.S. Navy, Philadelphia Naval Shipyard,
Philadelphia, Pennsylvania: Mark Donato, April 20,
1998

U.S. Navy, San Diego Naval Station, San Diego,
California (no explanation provided)