

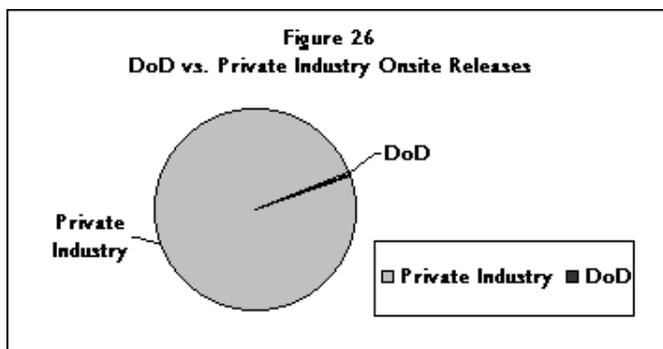
Department of Defense Reduces Toxic Chemical Release by 56% Within Four Years



Public Data Report On Toxics Release Inventory Data for 1994-1997

DoD eliminated 56 percent of its toxic chemical releases between 1994 and 1997--three years ahead of the President's goal to reduce releases 50 percent by 1999.

DoD's 1997 on-site releases to air, water, land and underground injection totaled 3.9 million pounds while private industry on-site releases for the reporting year 1996 were 2.1 billion pounds. Thus, DoD represents a small portion of the total reported toxic releases, or approximately 0.19 percent (Figure 26).



This report summarizes the DoD Toxic Release Inventory (TRI) data for calendar year (CY) 1997, as well as trend data for CY 1994 through CY 1997.

Executive Order Reduction Program

In August 1993, the President issued Executive Order (EO) 12856, Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements. This EO requires Federal agencies to comply with the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 and the Pollution Prevention Act of 1990. In EO 12856, the President challenged Federal agencies to be open with the community about releases of toxic chemicals, to reduce these releases 50 percent by 1999, and to aggressively use pollution prevention approaches to minimize the Federal Government's impact on the environment.

EPCRA

requires certain manufacturing sectors to publicly report toxic chemical releases and off-site transfers to the Environmental Protection Agency (EPA) and state governments. EPA compiles this information into a database known as the Toxic Release Inventory (TRI). EPA's TRI Program provides the public with information on the releases of listed toxic chemicals in their communities and provides the agency with information to assist in determining the need for future regulations. Facilities must report on both routine and accidental releases of listed toxic chemicals, the maximum amount of the listed chemical on site during the calendar year, and the amount of chemical contained in wastes transferred off site.

The Pollution Prevention Act of 1990

sets forth a hierarchy for waste management, requiring manufacturers – whenever feasible – to first prevent or reduce waste at the source before considering options for recycling, treatment, or disposal. The goal of DoD's pollution prevention policy and the EO is to encourage DoD installations to actively pursue eliminating the generation of pollutants instead of reactively disposing of waste or releasing pollutants into the environment.

EO 12856

extended compliance with both Acts to Federal facilities, including the Department of Defense. EPA measures progress by tracking on-site releases to air, land, water, and underground injection, as well as off-site transfers for treatment, storage, or disposal.¹ The baseline is the 1994 reporting year data. The goal is to reduce the emissions reported from the baseline by 50 percent by 1999. This goal applies to all of DoD; each installation must implement measures to support the overall reduction goal. DoD is using the information collected under this program to measure progress in pollution prevention and to analyze trends for future action.

¹Hereinafter, "on-site releases" refers to on-site releases of toxic chemicals to the air, land, water, and underground injection. "Off-site transfers" refers to off-site transfers of toxic chemicals for the treatment, storage, or disposal.

DoD's 1997 Toxic Release Inventory Data

In 1994, DoD released and transferred off-site 10.8 million pounds of toxic chemicals. By 1997, the amount released and transferred was only 4.7 million pounds, or 56 percent less than was released and transferred in 1994.

Figure 27 shows the amounts and types of releases, recycling, energy recovery, and off-site transfers associated with the DoD's CY 1997 TRI reporting. An explanation of terms used in this graphic is provided at the end of this chapter. Figure 28 provides a comparison of the CY 1994 through CY 1997 baseline and illustrates the change in reportable quantities that comprise the baseline.

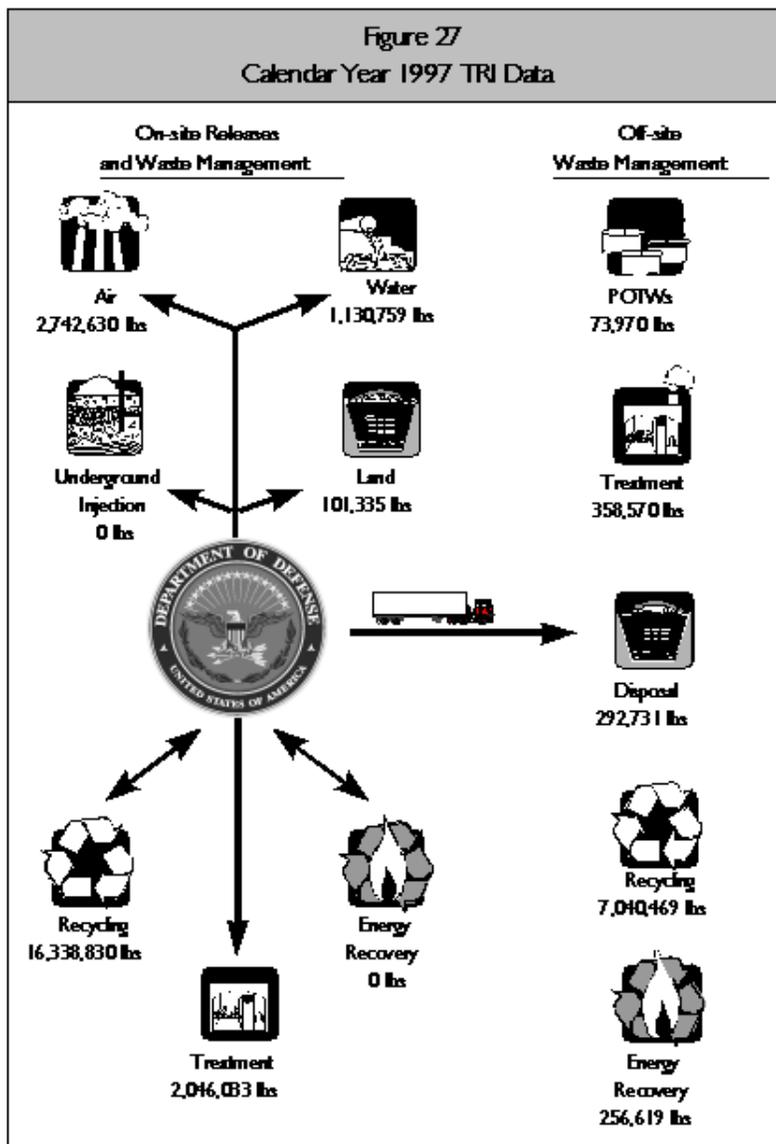


Figure 28
DoD TRI Reportable Quantities 1994 to 1997
(thousands of pounds)

	1994	1995	1996	1997
On-site Underground Injection	390	0	0	0
On-site Releases to Air	6,986,203	4,990,877	3,427,182	2,742,630
On-site Releases to Water	90,629	359,994	344,147	1,130,759*
On-site Land	113,714	28,945	32,054	101,335
Off-site Transfer to Disposal	2,106,736	670,105	556,766	292,731
Off-site Transfer to Treatment	1,395,277	804,331	503,891	358,570
Off-site Transfer to POTW	95,987	11,104	56,219	73,970
TOTALS	10,788,936	6,865,356	4,920,259	4,699,995

*1997 increase is due to revised Radford Army Ammunition Plant data. For details, refer to note on page 53.

In CY 1997, 75 installations met TRI reporting thresholds for one or more toxic chemicals and filed a Form R for each chemical with EPA and the state in which they are located. DoD filed 227 Form Rs for CY 1997.

Chemical Distribution of Reductions

The majority of DoD's toxic chemical releases and off-site transfers involve a limited number of toxic chemicals. In DoD's March 1994 TRI Report, the top ten chemicals released or transferred accounted for 72 percent of the baseline (see Table 1, p. 50). Since 1994, DoD has made significant reductions in the release of these chemicals.

DoD installations reported 55 different TRI chemicals released or transferred in CY 1997, reduced from 74 chemicals reported in CY 1994. These chemicals are used throughout industry and DoD in a variety of maintenance operations including painting, paint stripping, cleaning, degreasing, and deicing, as well as in manufacturing munitions. DoD has a number of initiatives underway to further reduce the use of these chemicals.

Reductions at Individual Installations

As in CY 1996, DoD's large maintenance and depot operations, primarily those engaged in overhauling and repairing aircraft, comprised the largest reported volumes in DoD releases and transfers (See Table 2, p. 50). DoD has implemented strong pollution prevention programs at these top ten facilities, reducing releases and transfers 64 percent from CY 1994 to 1997.

Reasons for DoD's TRI Reduction

DoD attributes its dramatic 56 percent reduction in TRI releases and transfers to three primary factors:

- DoD's emphasis on pollution prevention programs
- Production changes and base closures
- Improved reporting and more accurate accounting of material.

Table 1 Change in Top 10 Chemical Releases and Transfers

Top 10 Chemicals From the 1994 Baseline	1994	1995	1996	1997	Percent Change 94-97	Percent Change 95-97	Percent Change 96-97
DICHLOROMETHANE	2,235,670	1,617,221	967,859	766,072	-65.73%	-52.63%	-20.85%
METHYL ETHYL KETONE	1,504,895	1,097,024	939,170	616,750	-59.02%	-43.78%	-34.33%
1,1,1-TRICHLOROETHANE	1,232,070	751,890	283,334	217,171	-82.37%	-71.12%	-23.35%
ETHYLENE GLYCOL	537,125	329,919	292,700	145,181	-72.97%	-55.99%	-50.40%
TOLUENE	445,350	234,517	194,972	131,555	-70.46%	-43.90%	-32.53%
PHENOL	411,988	266,784	124,235	87,281	-78.81%	-67.28%	-29.75%
ZINC COMPOUNDS	409,180	52,738	34,171	28,526	-93.03%	-45.91%	-16.52%
TETRACHLOROETHYLENE	359,039	217,682	242,049	195,572	-45.53%	-10.16%	-19.20%
HEXACHLOROETHANE	351,370	56,112	23,470	0	-100.00%	-100.00%	-100.00%
HYDROCHLORIC ACID	298,000	Delisted	Delisted	Delisted	-100.00%	0.00%	0.00%
TOTAL	7,784,687	4,623,887	3,101,960	2,188,108	-71.89%	-52.68%	-29.46%

Table 2 Change in Top 10 Installation Releases and Transfers							
Top 10 1994 Installations	1994	1995	1996	1997	Percent Change 94-97	Percent Change 95-97	Percent Change 96-97
TINKER AFB	1,569,614	1,080,881	728,670	520,020	-66.87%	-51.89%	-28.63%
ROBINS AFB	776,616	578,562	334,898	403,058	-48.10%	-30.33%	20.35%
ARMY PINE BLUFF ARSENAL	725,534	253,949	47,011	0	-100.00%	-100.00%	-100.00%
AF PLANT 06	554,555	507,909	292,613	133,400	-75.94%	-73.74%	-54.41%
ANNISTON ARMY DEPOT	527,591	428,840	225,446	245,617	-53.45%	-42.73%	8.95%
VOUGHT AIRCRAFT COMPANY (NORTHROP)	462,481	496,710	249,900	256,800	-44.47%	-48.30%	2.76%
HILL AFB	367,909	263,560	294,815	234,029	-36.39%	-11.20%	-20.62%
KELLY AFB	342,871	227,663	144,014	100,850	-70.59%	-55.70%	-29.97%
MCCLELLAN AFB	340,750	231,800	279,100	162,161	-52.41%	-30.04%	-41.90%
NAS JACKSONVILLE	325,648	247,896	217,041	122,303	-100.00%	-50.66%	-43.65%
TOTAL	5,993,569	4,317,770	2,813,508	2,178,238	-63.66%	-49.55%	22.58%

Large industrial installations such as the Tinker and Robins Air Force Bases, Jacksonville Naval Air Station, Anniston Army Depot and Barstow Marine Corps Logistics Base achieved significant reductions in their TRI releases and transfers while their production levels remained stable or increased. DoD has focused its efforts on these major installations and its large-use chemicals because 72 percent of DoD's releases and transfers consisted of 10 chemicals, and the top 10 installations accounted for 50 percent of the releases and transfers.

Changes in DoD activity levels also contributed to reductions in TRI releases and transfers, particularly in 1995. The closing of several bases and government owned, contractor operated (GOCO) facilities, as well as reducing toxic chemical production, accounts for changes in TRI reportable quantities (Figure 29). Collectively, the Navy and Army facilities released and transferred nearly 725,000 pounds of toxic chemicals in 1994. By 1996, these facilities were no longer in use and consequently did not exceed TRI reporting thresholds. Thus these closings accounted for nearly 15 percent of DoD's total 5 million reduction in 1996.

Figure 29 Specific Facilities Closed 1994-1997
Navy
Naval Air Station Alameda, California
Naval Shipyard Long Beach, California
Hercules Corporation McGregor, Texas (GOCO*)
Northrop Grumman Calverton, Maryland (GOCO)
Northrop Grumman Bethpage, Maryland (GOCO)
Raytheon Bristol, Tennessee (GOCO)
Army
Kansas City Army Ammunition Plant, Kansas
Longhorn Ammunition Plant, Texas (layaway status)
Lonestar Ammunition Plant, Texas (layaway status)
*Government Owned, Contractor Operated Facility

Finally, improved reporting methods and more accurate accounting of material accounts for some of the reductions. EPA's Toxic Release Inventory reporting program is constantly evolving. The Agency adds chemicals and chemical categories, newly regulated facilities, and new data elements. Regulated facilities must report all new TRI information in the year for which the requirements are effective. For example, on November 30, 1994, EPA added approximately 300 toxic chemicals to the TRI list of toxic chemicals. The addition was effective for the 1995 reporting cycle. EPA also responds to petitions from interested parties and periodically removes (delists) or modifies the reporting requirements for toxic chemicals. In addition to these changes, EPA allows TRI reporting facilities to submit revisions to prior year reports. Historically, the first year of TRI reporting has been difficult for first-time reporters. Generally, accuracy improves with the second year of reports, and facilities often submit corrections to their first reports.

While it is easy to account for these changes when examining the data for the year in which they were effective, accounting for the changes must be done carefully when comparing historical data. This is especially true when data is to be compared for the purpose of

tracking progress towards achieving a goal such as that contained in EO 12856. Proper adjustments need to be made to limit artificial reductions or increases when examining baseline data. To ensure accurate tracking of the real progress made in reducing releases and transfers, DoD has carefully adjusted the numbers to reflect additions and deletions, corrections and other changes.

DoD Component Data

The following pages provide DoD Component specific details on the 1994 - 1997 DoD baseline.

Army TRI Data

Table 1 - Change in Top 10 Chemical Releases and Transfers							
Top 10 1994 Chemical	1994	1995	1996	1997	94-97%	95-97%	96-97%
ZINC COMPOUNDS	368,971	20,008	31,171	3,426	-99.07%	-82.88%	-89.01%
HEXACHLOROETHANE	351,370	56,112	23,470	0	-100.00%	-100.00%	-100.00%
METHYL ETHYL KETONE	230,817	152,486	105,603	65,994	-71.41%	-56.72%	-37.51%
1,1,1-TRICHLOROETHANE	226,377	137,450	86,833	40,719	-82.01%	-70.38%	-53.11%
TRICHLOROETHYLENE	214,223	148,508	40,000	71,028	-66.84%	-52.17%	77.57%
DICHLOROMETHANE	186,409	150,300	86,990	115,002	-38.31%	-23.49%	32.20%
PHOSPHORIC ACID	135,990	48,410	51,177	44,783	-67.07%	-7.49%	-12.49%
ETHYLENE GLYCOL	121,059	194,648	85,073	35,039	-71.06%	-82.00%	-58.81%
CHLORINE	67,470	11,345	5,418	16,838	-75.04%	48.42%	2107.8%
CHROMIUM COMPOUNDS	67,413	48,996	61,499	48,159	-28.56%	-1.71%	-21.69%

Table 2 - Change in Top 10 Installation Releases and Transfers							
Top 10 1994 Installations	1994	1995	1996	1997	94-97%	95-97%	96-97%
ARMY PINE BLUFF ARSENAL	725,534	253,949	47,011	0	-100.00%	-100.00%	-100.00%
ANNISTON ARMY DEPOT	527,591	428,840	225,446	245,617	-53.45%	-42.73%	89.5%
LETTERKENNY ARMY DEPOT	144,485	109,693	39,621	18,968	-86.87%	-82.71%	-52.13%
ARMY WATERLIET ARSENAL	135,075	46,144	82,375	96,543	-28.53%	109.22%	17.20%
RED RIVER ARMY DEPOT	117,864	81,798	45,778	46,525	-60.53%	-43.12%	1.63%
HOLSTON ARMY AMMUNITION PLNT	101,900	322,200	236,260	246,100	141.51%	-23.62%	4.16%
LAKE CITY ARMY AMMUNITION PLNT	83,911	67,497	49,041	42,662	-49.16%	-36.79%	-13.01%
FORT HOOD	57,550	45,600	686	686	-98.81%	-98.50%	0.00%
STRATFORD ENGINEERING PLANT	55,441	24,501	23,701	0	-100.00%	-100.00%	-100.00%
ROCK ISLAND ARSENAL	52,000	14,500	0	0	-100.00%	-100.00%	0.00%

* Please note: Radford Army Ammunition Plant recently issued a revision to their CY 1995 through 1996 TRI data. Their on-site releases to water were 816,000 pounds in CY 1995 and 800,000 pounds in CY 1996, rather than the initial report of 31,000 pounds in CY 1995 and 32,000 pounds in CY 1996.

Navy TRI Data

Table 1 - Change in Top 10 Chemical Releases and Transfers							
Top 10 1994 Chemical	1994	1995	1996	1997	94-97%	95-97%	96-97%
I, I, I-TRICHLOROETHANE	59,172	438,269	120,000	135,300	-77.31%	-69.13%	127.5%
DICHLOROMETHANE	358,283	252,221	161,750	62,294	-82.61%	-75.30%	-61.49%
METHYL ETHYL KETONE	288,488	231,715	198,900	101,503	-64.82%	-56.19%	-48.97%
N-BUTYL ALCOHOL	184,055	131,463	137,372	126,837	-31.09%	-3.52%	-7.67%
NITRIC ACID	160,881	14,166	10,416	52,003	-67.68%	267.10%	399.26%
XYLENE (MIXED ISOMERS)	130,312	64,455	52,306	129,860	-0.35%	101.47%	148.27%
FREON 113	129,933	21,925	35,890	0	-100.00%	-100.00%	-100.00%
TOLUENE	92,078	153,52	29,959	38,110	-58.61%	148.24%	27.21%
PHENOL	48,068	31,949	31,490	0	-100.00%	-100.00%	-100.00%
COPPER	37,785	46,134	29,600	30,263	-19.91%	-34.40%	2.24%

Table 2 - Change in Top 10 Installation Releases and Transfers							
Top 10 1994 Installations	1994	1995	1996	1997	94-97%	95-97%	96-97%
VOUGHT AIRCRAFT CO (NORTHROP)	462,481	496,710	249,900	256,800	-44.47%	-48.30%	27.6%
NAS JACKSONVILLE	325,648	247,896	217,041	122,303	-62.44%	-50.66%	-43.65%
NAS ALAMEDA	227,500	0	0	0	-100.00%	0.00%	0.00%
NORFOLK NAVAL SHIPYARD	186,090	65,666	53,980	62,120	-66.62%	-5.40%	15.08%
GRUMMAN AEROSPACE CORP	184,602	0	0	0	-100.00%	0.00%	0.00%
PUGET SOUND NAVAL SHIPYARD	178,400	147,041	139,800	186,100	43.2%	26.56%	33.12%
NAVAL BASE NORFOLK	132,325	74,971	59,800	21,380	-83.84%	-71.48%	-64.25%
PHILADELPHIA NAVAL SHIPYARD	129,340	73,870	0	0	-100.00%	-100.00%	0.00%
NAWC PATUXENT RIVER	76,174	0	0	0	-100.00%	0.00%	0.00%
NAVAL WEAPONS IND RESERVE PLNT	73,016	24,596	0	0	-100.00%	-100.00%	0.00%

Marine Corps TRI Data

Table 1 - Change in Top 10 Chemical Releases and Transfers							
Top 10 1994 Chemical	1994	1995	1996	1997	94-97%	95-97%	96-97%
ETHYLENE GLYCOL	237,821	86,708	38,002	5,628	-97.63%	-93.51%	-85.19%
DICHLOROMETHANE	155,986	98,300	15,000	0	-100.00%	-100.00%	-100.00%
METHYL ETHYL KETONE	144,653	128,588	127,600	42,320	-70.74%	-67.09%	-66.83%
I, I, I-TRICHLOROETHANE	76,062	48,289	0	0	-100.00%	-100.00%	0.00%
TOLUENE	68,054	53,350	37,000	8,900	-86.92%	-83.32%	-75.95%
XYLENE (MIXED ISOMERS)	51,535	37,416	21,400	5,600	-89.13%	-85.03%	-73.83%
FREON 113	28,000	27,000	0	0	-100.00%	-100.00%	0.00%
GLYCOL ETHERS	28,000	47,000	20,000	4,300	-84.64%	-90.85%	-78.50%
CHROMIUM	25,897	0	0	0	-100.00%	0.00%	0.00%
N-BUTYL ALCOHOL	24,001	8,200	0	0	-100.00%	-100.00%	0.00%

Table 2 - Change in Top 10 Installation Releases and Transfers							
Top 10 1994 Installations	1994	1995	1996	1997	94-97%	95-97%	96-97%
MCLB BARSTOW	322,011	87,961	31,304	16,846	-94.77%	-80.85%	-46.19%
MCLB ALBANY	282,273	254,340	133,200	15,560	-94.49%	-93.88%	-883.2%
MCAS CHERRY PT	263,370	216,673	110,091	33,664	-87.22%	-84.46%	-69.42%
MCB CAMP LEJEUNE	31,630	0	835	3,944	-87.53%	0.00%	37234%
USMC BLOUNT ISLAND COMMAND	20,000	0	10,700	0	-100.00%	0.00%	-100.00%
MCAS YUMA	1,050	1,028	0	0	-100.00%	-100.00%	0.00%
MCB QUANTICO	34	36	37	37	8.82%	27.8%	0.00%
MC RECRUIT DEPOT PARRIS ISLAND	5	0	0	0	-100.00%	0.00%	0.00%
MCB CAMP PENDLETON	0	5376	0	0	0.00%	-100.00%	0.00%

Air Force TRI Data

Table 1 - Change in Top 10 Chemical Releases and Transfers							
Top 10 1994 Chemical	1994	1995	1996	1997	94-97%	95-97%	96-97%
DICHLOROMETHANE	1,534,992	1,116,400	704,119	588,776	-61.64%	-47.26%	-16.38%
METHYL ETHYL KETONE	840,937	584,235	507,067	406,933	-51.61%	-30.35%	-19.75%
PHENOL	363,920	234,835	92,745	87,281	-76.02%	-62.83%	-5.89%
TETRACHLOROETHYLENE	335,798	217,340	241,835	195,572	-41.76%	-10.02%	-19.13%
1,1,1-TRICHLOROETHANE	333,459	127,882	76,501	41,152	-87.66%	-67.82%	-46.21%
TOLUENE	225,563	133,460	90,287	58,658	-73.99%	-56.05%	-35.03%
ETHYLENE GLYCOL	162,300	40,916	144,009	77,534	-52.23%	89.50%	-46.16%
CHROMIUM COMPOUNDS	151,886	56,898	52,246	49,470	-67.43%	-13.05%	-5.31%
GLYCOL ETHERS	139,390	30,193	44,076	45,396	-67.43%	50.35%	2.99%
MANGANESE COMPOUNDS	136,000	0	0	0	-100.00%	0.00%	0.00%

Table 2 - Change in Top 10 Installation Releases and Transfers							
Top 10 1994 Installations	1994	1995	1996	1997	94-97%	95-97%	96-97%
TINKER AFB	1,569,614	1,080,881	728,670	520,020	-66.87%	-51.89%	-28.63%
ROBINS AFB	776,616	578,562	334,898	403,058	-48.10%	-30.33%	20.35%
AF PLANT 06 (LOCKHEED MARTIN)	594,555	507,909	292,613	133,400	-75.94%	-73.74%	-54.41%
OGDEN AIR LOGISTICS CENTER (HILL AFB)	367,909	263,560	294,815	234,029	-36.39%	-11.20%	-20.62%
KELLY AFB	342,871	227,663	144,014	100,850	-70.59%	-55.70%	-29.97%
MC CLELLAN AFB	340,750	231,800	279,100	162,161	-52.41%	-30.04%	-41.90%
ARNOLD ENGINEER DEVELOP CNT	154,096	125,893	131,966	93,992	-39.00%	-25.30%	-28.78%
EDWARDS AFB	132,062				-100.00%	0.00%	0.00%
AF PLANT 44 (HUGHES SYSTEM)	123,430	35,502	18,800	3,100	-97.49%	-91.27%	-83.51%
AF PLANT 03 (ROCKWELL INTERNATIONAL)	123,413	37,355	46,026		-100.00%	-100.00%	-100.00%

Defense Logistics Agency TRI Data

Table 1 - Change in Top 10 Chemical Releases and Transfers							
Top 10 1994 Chemical	1994	1995	1996	1997	94-97%	95-97%	96-97%
TOLUENE	10,890	0	0	0	-100.00%	0.00%	0.00%
CYCLOHEXANE	8,037	0	0	0	-100.00%	0.00%	0.00%
BENZENE	6,353	0	0	0	-100.00%	0.00%	0.00%
NAPHTHALENE	2,919	0	0	0	-100.00%	0.00%	0.00%
XYLENE(MIXED ISOMERS)	2,648	0	0	0	-100.00%	0.00%	0.00%
METHANOL	2,908	0	0	0	0.00%	0.00%	0.00%
BROMOTRIFLUOROMETHANE	1,372	3,685	645	800	-41.69%	-78.29%	24.03%
BROMOCHLORODIFLUOROMETHANE	960	707	1,687	800	-16.67%	13.15%	-52.58%
ETHYLBENZENE	494	0	0	0	-100.00%	0.00%	0.00%
DICHLORODIFLUOROMETHANE	100	485	0	500	400.00%	3.09%	500.00%

Table 2 - Change in Top 10 Installation Releases and Transfers							
Top 10 1994 Installations	1994	1995	1996	1997	94-97%	95-97%	96-97%
GRAND FORK FUEL SUPPORT POINT	10,872	0	0	0	-100.00%	0.00%	0.00%
VERONA FUEL SUPPORT POINT	5,516	0	0	0	-100.00%	0.00%	0.00%
CHARLESTON FUEL SUPPORT POINT	4,274	0	0	0	-100.00%	0.00%	0.00%
ESCANABA FUEL SUPPORT POINT	2,819	0	0	0	-100.00%	0.00%	0.00%
DEFENSE SUPPLY CENTER RICHMOND	2,432	5,101	4,854	2,200	-9.54%	-56.87%	-54.68%
SEARSPORT FUEL SUPPORT POINT	1,780	0	0	0	-100.00%	0.00%	0.00%
SAN PEDRO FUEL SUPPORT POINT	1,200	0	0	0	-100.00%	0.00%	0.00%
TAMPA FUEL SUPPORT POINT	1,175	0	0	0	-100.00%	0.00%	0.00%
MELVILLE FUEL SUPPORT POINT	1,035	0	0	0	-100.00%	0.00%	0.00%
ANCHORAGE FUEL SUPPORT POINT	967	0	0	0	-100.00%	0.00%	0.00%

An Explanation of Terms Used

Air Releases	Releases to air are reported either as stack or fugitive emissions. Stack emissions are releases to air that occur through confined air streams, such as stacks, vents, ducts, or pipes. Fugitive emissions include equipment leaks, evaporative losses from surface impoundments and spills, and releases from building ventilation systems.
Surface Water Releases	Releases to water include discharges to streams, rivers, lakes, oceans, and other bodies of water. This includes releases from contained sources, such as industrial process outflow pipes or open trenches. Releases caused by runoff, including stormwater runoff, are also reportable under TRI.
Land Releases	Releases to land covered under TRI are those that occur within the boundaries of the reporting facility. Releases to land include disposal of toxic chemicals into landfills, land treatment/application farming (in which a waste containing a listed chemical is applied to or mixed with the soil), surface impoundments (which are uncovered holding areas used to volatilize and/or settle waste materials), and other land disposal (such as spills, leaks, or waste piles).
Underground Injection	Underground injection is a contained release of a fluid into a subsurface well for the purpose of waste disposal.
Recycling	Toxic chemicals can be either recycled on-site or sent off-site for recycling. The toxic chemicals may be recovered or regenerated by a variety of methods, including solvent recovery, metals recovery, and acid regeneration. Once recycled, these chemicals may be returned to the installation or sold for further processing or use. The quantity reported as on-site recycling in the Form R represents the quantity recovered at the facility, not the quantity that entered the recycling operation. The quantity reported as off-site recycling in the Form R represents the quantity that left the installation boundary for recycling, not the amount recovered at the off-site location.
Energy Recovery	Toxic chemicals can be either processed on-site or sent off-site for energy recovery. The toxic chemicals are combusted in industrial furnaces or boilers that generate heat or energy for use at that location. Treatment of a chemical by incineration is not considered to be energy recovery. The quantity reported as on-site energy recovery in the Form R represents the quantity of the toxic chemical that was destroyed in the combustion process, not the amount that entered the energy recovery unit. The quantity reported as off-site energy recovery in the Form R represents the quantity of the toxic chemical that left the installation boundary for recovery, not the amount destroyed at the off-site location.
Destruction	Toxic chemicals can be destroyed on-site using a variety of methods. After destruction, no further treatment or transfer to an off-site location is necessary. The quantity reported in the Form R represents the quantity of the toxic chemical that was destroyed in the on-site waste treatment operations, not the amount that entered any treatment operation.
POTWs	Toxic chemicals can be transferred off-site to a publicly owned treatment works (POTW). Wastewaters are transferred through pipes or sewers to a POTW. Not all TRI chemicals can be treated or removed by a POTW. The quantity reported in the Form R represents the quantity of the toxic chemical that left the installation boundary for POTW treatment, not the amount that was destroyed at the off-site location.
Treatment	Toxic chemicals may be sent off-site for treatment using a variety of methods, including biological treatment, neutralization, incineration, stabilization, and physical separation. These methods result in varying degrees of destruction of the toxic chemical.
Disposal	Toxic chemicals sent off-site to a facility for disposal generally are either released to land or injected underground at the off-site location.