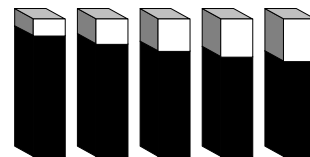


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# Chapter 3



## Year-to-Year Comparison of Toxics Release Inventory Data

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This chapter compares TRI data for on- and off-site releases, on-site waste management, and transfers off-site for further waste management for two time periods: The first period reviews data for the last three reporting years (1995, 1996, and 1997), and the second period compares data for the TRI baseline reporting year and recent years (1988 and 1995-1997). Because not all types of data were collected in 1988, this chapter looks at waste management data for the first year that TRI collected such data (1991) and for recent years (1995-1997).

The discussion of “core” chemical lists, in the Introduction below, is important for accurate interpretation of these year-to-year comparisons because of the important changes in TRI over time.

### Introduction

Because TRI data are collected annually, they can be used to measure the nation’s progress in reducing toxic chemical releases and other waste management activities by manufacturing facilities and federal facilities. This chapter measures such progress on a national, state, and chemical-specific basis. Industry-specific analyses of year-to-year changes in TRI reporting appear in Chapter 4.

Tables in this chapter compare data for 1995 to 1997 to highlight recent changes in reporting. These tables give a three-year view of TRI reporting since the addition of nearly 300 substances in reporting year 1995.

Other tables compare data for 1995 to 1997 with the 1988 baseline data to measure progress since the

beginning of TRI. Although 1987 was the first year for TRI reporting, 1988 has been chosen as the baseline year for comparisons because of concerns about the data quality of industry’s submissions in the first year.

For waste management activities, progress can be measured from 1991, when such data were first collected by TRI. This section analyzes the actual quantities for previous and current years (1991 and 1995-1997), followed by a comparison of facilities’ actual and projected data (1991, 1995-1997 with projections for 1998 and 1999).

Certain TRI reporting requirements have changed since the inception of the program—not only the addition of waste management data in 1991, but also the chemical expansion that nearly doubled the TRI chemical list beginning in the 1995 reporting year. It is important to understand these and other changes and consider their implications when comparing TRI data across years.

### “Core” Chemicals for Year-to-Year Comparisons

EPA has the authority both to add chemicals to the TRI reporting list if they meet the statutory toxicity criteria. Conversely, EPA may delete chemicals if they do not meet the toxicity criteria. Since 1987, EPA has deleted a number of chemicals from the list, added others, and modified the reporting requirements for others. The largest expansion was the addition of 286 chemicals and chemical categories for the 1995 reporting year.



Year-to-year comparisons must be based on a consistent set of chemicals to assure that any changes in releases or other waste management do not simply reflect the addition, deletion, or change in definition of reportable chemicals from one year to another. Data in this chapter represent facility reporting only for the “core” chemicals for the years being compared. The set of “core” chemicals differs depending on the base year of comparison.

### **Three-year Comparisons**

Tables comparing data for 1995 through 1997 include all chemicals currently reportable to TRI; there have been no additions or modifications to reporting requirements during this period. Thus, these tables include the nearly 300 chemicals added to TRI beginning with reporting year 1995 in addition to the roughly 300 chemicals that were on the list prior to 1995. Because no chemicals have been added or definitions changed since 1995, the 1997 totals in this chapter for on- and off-site releases, other on-site waste management, transfers off-site for further waste management, and total production-related waste are the same as the totals in Chapter 2.

### **Baseline Comparisons**

Tables for 1988 to 1997 include only chemicals that were reportable in all years from 1988 through 1997. These tables do not include, for example, chemicals added in 1990, 1991, 1994, or 1995. Also for 1989, non-fibrous forms of aluminum oxide were removed from the list. Because of this modification, aluminum oxide is not included in any year-to-year comparison that includes the year 1988. As explained below, the reporting definitions for ammonia, hydrochloric acid, and sulfuric acid have changed, and they therefore are also not included in these tables. These tables summarize reporting for the 1988-1997 “core” chemicals.

Similarly, tables that compare data for 1991 to 1997 do not include chemicals added in 1994 or 1995. These tables analyze TRI data only for the chemicals that were on the TRI list, in the same form, for all years 1991-1997.

Because of this normalization process, done to assure accurate year-to-year comparisons, totals for 1997 in the multi-year baseline tables differ from the 1997 totals in Chapter 2 and in the three-year tables in this chapter.

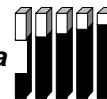
None of the tables includes any chemical deleted from the TRI list, regardless of the year it was deleted.

TRI data are reported as absolute amounts each year, not as changes in relation to production levels or other factors, such as source reduction activity, that might influence these amounts from year to year. Chapter 4, presenting industry-specific data, takes a very basic look at changes in production as they may relate to increases and decreases in releases and other waste management of TRI chemicals.

### **Reporting of Ammonia, Hydrochloric Acid, and Sulfuric Acid**

As described in Box 3-1, reporting requirements for ammonia have changed. Also, ammonium sulfate and ammonium nitrate are no longer individually listed on TRI. The ammonia portion of these chemicals, however, remains on the TRI list, and the nitrate ion portion of ammonium nitrate is reportable under the nitrate compounds category (added with the 1995 reporting year).

In addition, non-aerosol forms of hydrochloric acid and sulfuric acid have been removed from the list, hydrochloric acid with the 1995 reporting year and sulfuric acid in 1994 (see Box 3-2).

**Box 3-1. An Explanation of the Modification to the Reporting Requirements for Aqueous Ammonia and the Delisting of Ammonium Sulfate (Solution) and Ammonium Nitrate (Solution)****An Explanation of the Modification to the Reporting Requirements for Aqueous Ammonia and the Delisting of Ammonium Sulfate (Solution) and Ammonium Nitrate (Solution)**

On June 30, 1995, EPA finalized four actions in response to a petition to delete ammonium sulfate (solution) from the list of toxic chemicals subject to reporting under EPCRA section 313: (1) deleted the sulfate portion of ammonium sulfate (solution) from the list of toxic chemicals and made the ammonia portion reportable under the ammonia listing, (2) required that threshold and release determinations for aqueous ammonia be based on 10% of the total aqueous ammonia present in aqueous solutions of ammonia, (3) modified the ammonia listing by adding this qualifier: “ammonia (includes anhydrous ammonia and aqueous ammonia from water dissociable ammonium salts and other sources; 10% of total aqueous ammonia is reportable under this listing),” and (4) removed the specific listing for ammonium nitrate (solution), although the ammonia portion is still reportable under the ammonia listing and, as discussed below, ammonium nitrate is also reportable under the nitrate compounds category. All actions were effective for the 1994 reporting year (reports due July 1, 1995), except for deletion of the specific listing for ammonium nitrate (solution), which became effective with the 1995 reporting year.

In previous years, there was a great deal of confusion as to what should be reported under the ammonia listing, specifically over the sources of aqueous ammonia that must be included and how aqueous ammonia should be reported. Modifying the ammonia listing by adding the above qualifier should result in more consistent and accurate reporting under this listing since it clarifies what is reportable. The requirement to report only 10% of total aqueous ammonia under the ammonia listing takes into account the fact that one form of ammonia is relatively more toxic to aquatic organisms and that under many environmental conditions this form makes up no more than 10% of total aqueous ammonia. The 10% reporting limit for aqueous ammonia means that some facilities will no longer meet reporting thresholds and that the pounds of aqueous ammonia reported as released and transferred from the facilities that do report may be lower. It is important to remember that the 10% reporting limit only applies to aqueous ammonia; anhydrous ammonia is still 100% reportable.

Although ammonium sulfate (solution) has been deleted from the list, the aqueous ammonia from this chemical is still reportable under the ammonia listing. To determine the amount of aqueous ammonia from ammonium sulfate (solution) that should be added to the aqueous ammonia totals, the amount of ammonium sulfate (solution) is multiplied by 0.026. This represents 10% of the total aqueous ammonia present in ammonium sulfate (solution) since ammonia (as  $\text{NH}_3$ ) makes up 26% of ammonium sulfate.

The removal of the ammonium nitrate (solution) listing is reflected in this public data release. Like ammonium sulfate (solution), the aqueous ammonia from ammonium nitrate (solution) is reportable under the ammonia listing. To determine the amount of aqueous ammonia from ammonium nitrate (solution) that should be added to the aqueous ammonia totals, the amount of ammonium nitrate (solution) is multiplied by 0.021. This represents 10% of the total aqueous ammonia present in ammonium nitrate (solution) since ammonia (as  $\text{NH}_3$ ) makes up 21% of ammonium nitrate. In addition, ammonium nitrate is also reportable under the nitrate compounds category, which was added for the 1995 reporting year. Although this chemical is reportable under two listings, no double reporting of releases or transfers occurs since under the nitrate compounds category only the weight of the nitrate ion is included in calculations of releases and transfers.

To determine the quantity of total aqueous ammonia released to surface water, land, or underground injection, data users must multiply the reported quantity by 10. For example, to make use of the quantities reported for aqueous ammonia in any analysis of releases to surface waters, the reported amounts must be converted to total aqueous ammonia values. This is necessary in order to take into account site-specific conditions of pH and temperature which determine the amount of total ammonia that will be present in the more aquatically toxic form. To convert the reported aqueous ammonia values to total ammonia, simply multiply amounts by 10.



Box 3-2. An Explanation of the Modification to the Reporting Requirements for Hydrochloric and Sulfuric Acid

### An Explanation of the Modification to the Reporting Requirements for Hydrochloric and Sulfuric Acid

On June 30, 1995, EPA finalized a modification to the listing for sulfuric acid, and on July 25, 1996, EPA finalized the same modification to the listing for hydrochloric acid. These two chemical listings were modified by the addition of the following qualifier: “(acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size).” The modification to sulfuric acid was effective for the 1994 reporting year and the modification to hydrochloric acid was effective for the 1995 reporting year. EPA made those modifications in response to petitions to delist the non-aerosol forms of these chemicals. EPA determined that the non-aerosol forms did not meet the listing criteria of EPCRA section 313(d) and therefore granted the petitions. These modifications mean that facilities are no longer required to report releases and transfers of non-aerosol forms of sulfuric and hydrochloric acid under EPA section 313.

These changes in the reporting requirements for sulfuric and hydrochloric acid are reflected in the largest reductions in reported amounts of these chemicals as compared to those published in *TRI Public Data Release* reports prior to the volume for the 1996 reporting year. Most of these reductions result from the fact that solutions of these chemicals that do not become airborne are exempt from reporting. Thus, there are large reductions in the reported amounts released, particularly quantities discharged to surface waters and injected underground and in amounts reported for most types of transfers. Since airborne forms are still covered by these listings, reported fugitive or nonpoint air emissions have not changed as much as other types of releases, and there has been little change in the stack or point air emission totals. In addition to lower reported releases and transfers, some facilities may no longer exceed reporting thresholds for the aerosol forms only and thus may not have to file a report.

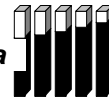
Only airborne forms of these chemicals count towards the reporting threshold and release calculations, and releases of their non-aerosol forms are no longer reportable. Because of this modification to the reporting requirements, these chemicals are not included in multi-year comparisons in this chapter (tables with data for 1988 or 1991).

#### Threshold Changes

Facilities are required to report for a particular chemical only if they meet the manufacture, process, or otherwise use thresholds. The otherwise use threshold has remained 10,000 pounds since the inception of the program. However, the manufacture and process thresholds began at 75,000 pounds for the 1987 reporting year, dropped to 50,000 pounds for 1988, and dropped to 25,000 pounds for 1989 and thereafter. Due in part to these declining thresholds, the number of facilities reporting to TRI and the number of forms filed increased from 1987 to 1988 and again from 1988 to 1989. These threshold changes may have affected the TRI data between 1988 and 1989, but would not affect data after 1989. As discussed in Chapter 1, EPA has proposed lower

thresholds for persistent bioaccumulators (PBTs).

As explained in Chapter 1, facilities whose “total annual reportable amount” does not exceed 500 pounds can submit certification statements (Form As) instead of Form Rs (if they do not manufacture, process, or otherwise use more than 1 million pounds of the chemical). This change became effective in reporting year 1995. Form A certification statements identify the facility and chemical, but do not supply any amounts of releases or other waste management. In prior years, facilities were required to report such amounts, and totals for 1988-1994 include these submissions. More than 10,500 Form A certification statements were submitted in 1997—these do not provide release or other waste management data. Thus, some portion of any decrease in reported amounts from 1994 or earlier years would be attributable to the submission of these certification forms. In 1997, with 10,547 Form As and a maximum of 500 pounds of production-related waste managed per form, the total production-related waste managed would, at most, be 5,273,500 pounds higher or an additional 0.02% reported if each Form A represented the full 500 pounds.



### **Underground Injection and On-site Land Releases**

In 1996, TRI began collecting data separately for types of underground injection and for on-site land releases to RCRA subtitle C landfills. Instead of reporting a total for underground injection in Form R's Section 5, facilities began reporting amounts injected into Class I wells separately from amounts injected into underground wells of other classes (II-V). Similarly, RCRA subtitle C landfills were separated out from other types of on-site land releases that are reported in Section 5. Because these releases were not broken out until 1996, they cannot be analyzed separately in the tables in this chapter.

### **Waste Management**

As described in Chapter 2, the Pollution Prevention Act of 1990 added to TRI the collection of waste management data items including: on- and off-site recycling, energy recovery, and treatment, plus quantity released on- and off-site, plus one-time catastrophic or remedial releases (non-production-related waste). Because these data items were not collected until 1991, comparisons cannot be drawn with 1988 data.

### **New Types of Transfers**

Beginning with the 1991 reporting year, facilities were required to report transfers off-site for the purposes of recycling and energy recovery to TRI. Prior to 1991, facilities were required to report only transfers to POTWs and other off-site locations for the purposes of treatment and disposal. Because of this change in the reporting requirements, transfers off-site for further waste management for 1988 are not comparable to such transfers for 1991 and beyond. Comparisons between 1988 and 1997 transfers in this chapter include only those transfer types that were reportable in 1988.

### **Metals and Metal Compounds**

As explained in Chapter 2, TRI began in reporting year 1997 distinguishing metals and metal compounds from other listed chemicals in certain types of off-site transfers. Specifically, metals and metal compounds transferred off-site to solidification/stabilization, to wastewater treatment (excluding POTWs), and to POTWs are also classified as off-site releases. (See Chapter 2, Boxes 2-2 through 2-4.) Although this categorization is new in 1997, comparable transfers of metals and metal compounds in previous years can be identified by the waste treatment codes that applied in those years. Tables in this chapter present such data.

### **Reasons for Change**

Box 3-3 provides reasons that a facility's reported amounts may change from one year to another. Explanations for changes in reported amounts include actual source reduction projects undertaken to reduce a facility's generation of waste of a particular chemical, increases or decreases in production levels, changes in a facility's methods of estimating or calculating reportable amounts (which does not indicate a corresponding change in actual releases and waste management), reporting errors in previous years for which the facility has not filed a revised submission, and others.

Apparent increases and decreases among industries (as seen in Chapter 4) can also result when facilities change the Standard Industrial Classification (SIC) codes that they report from one year to another, reflecting new or discontinued facility operations or indicating a different understanding of how SIC codes relate to the facility's business.



## 1995-1997 National Overview

### On- and Off-site Releases, 1995-1997

Total on- and off-site releases of toxic chemicals to the environment decreased by 38.8 million pounds from 1995 to 1997, as shown in Table 3-1. This net reduction of 1.5% occurred as total on- and off-site releases first declined from 2.62 billion pounds in 1995 to 2.52 billion pounds in 1996 and then increased to 2.58 billion pounds in 1997.

#### On-site Releases

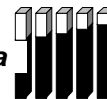
From 1995 to 1997, on-site releases decreased by 8.2%, a reduction of 187.8 million pounds (see Table 3-1). On-site releases totaled 2.30 billion pounds in 1995 and 2.12 billion pounds in 1997.

Air emissions, the largest type of on-site release in TRI reporting, also showed the largest reduction: from 1.58 billion pounds in 1995 to 1.33 billion pounds in 1997. This 15.7% reduction included decreases in both fugitive emissions (down 19.1%) and point source emissions (down 14.6%). Facilities also reported less underground injection, decreasing from 233.6 million pounds to 219.5 million pounds (a 6.0% reduction).

Surface water discharges and on-site land releases both increased. Surface water discharges rose from 175.8 million pounds in 1995 to 218.4 million pounds in 1997, a 24.2% increase. One facility reporting in SIC code 33, the primary metals industry, reported an increase in surface water discharges of nitrate compounds from 9.8 million pounds in 1995 to 26.0 million pounds in 1997. The facility attributed the increase to increased production and to increased use of nitric acid in a pickling process for production of specialty steels. A facility reporting in SIC code 28,

chemical manufacturing, reported an increase in surface water discharges of phosphoric acid from 14.1 million pounds in 1995 to 29.0 million pounds in 1997. This facility attributed its increase in part to the facility's lowering of water levels in ponds, requiring an increase in the releases of water containing phosphoric acid. Large rain events in previous years had filled the ponds to capacity, restricting the facility's capacity. The facility contact indicated that the facility expects releases of phosphoric acid to decline in 1998 to 1995 levels.

On-site land releases increased from 315.6 million pounds in 1995 to 346.9 million pounds in 1997, a 9.9% increase. This included substantial increases in on-site land releases of metal compounds by two primary metals facilities (SIC code 33). One facility reported on-site land releases of 3.1 million pounds of zinc compounds in 1995 and 12.0 million pounds in 1997. Another facility reported increases for four metal compounds: arsenic compounds from 620,000 pounds to 4.2 million pounds; copper compounds from 2.4 million pounds to 9.9 million pounds; lead compounds from 760,000 to 4.5 million pounds; and zinc compounds from 1.6 million pounds to 5.0 million pounds. (The total increase for the facility's reporting of these four metal compounds was 18.2 million pounds.) This facility indicated that it changed its smelting process in June 1995 to reduce sulfur dioxide emissions. From 1996 to 1997, increased production brought about a two-fold increase in production of slag tailings, accounting for about two-thirds of the facility's increase. The facility attributed the rest of the increase to a clean-up process that began in 1996. In this activity, sediment is being removed from old sludge ponds, dried, and relocated to a lined repository on-site that meets RCRA specifications. The clean-up process is expected to continue for a couple of years.

**Box 3-3. Reasons Facility Estimates of Releases and Other Waste Management Change****Reasons Facility Estimates of Releases and Other Waste Management Change**

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

**Real Changes**

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

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

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

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

**“Paper” Changes**

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

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

Changes in the reporting definition of a particular chemical may cause a change in the reported amounts without an actual change in quantities released or otherwise managed as waste. For example, revising the definitions of sulfuric acid and hydrochloric acid to include only aerosol forms, as discussed in Box 3-2, will result in lower reports of releases, when non-aerosol forms are no longer reported.

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

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



### Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

**Table 3-1. Comparison of TRI On-site and Off-site Releases and Transfers for Further Waste Management, 1995-1997**

	1995	1996	1997	Change 1995-1997	
	Number	Number	Number	Number	Percent
Total Facilities	22,664	22,047	21,490	-1,174	-5.2
Total Forms	75,371	72,643	71,670	-3,701	-4.9
Form Rs	68,793	65,247	61,123	-7,670	-11.1
Form As	6,578	7,396	10,547	3,969	60.3
	Pounds	Pounds	Pounds	Pounds	Percent
<b>On-site Releases</b>					
Total Air Emissions	1,579,242,325	1,458,785,384	1,331,663,886	-247,578,439	-15.7
Fugitive Air Emissions	392,069,349	350,543,301	317,233,311	-74,836,038	-19.1
Point Source Air Emissions	1,187,172,976	1,108,242,083	1,014,430,575	-172,742,401	-14.6
Surface Water Discharges	175,819,158	179,229,798	218,371,961	42,552,803	24.2
Underground Injection	233,588,328	204,237,312	219,513,898	-14,074,430	-6.0
On-site Land Releases	315,612,588	332,123,472	346,904,510	31,291,922	9.9
Total On-site Releases	2,304,262,399	2,174,375,966	2,116,454,255	-187,808,144	-8.2
<b>Off-site Releases</b>					
Storage Only <sup>a</sup>	2,222,526	1,444,059	6,626,857	4,404,331	198.2
Solidification/Stabilization <sup>b</sup>	26,383,685	57,678,733	144,325,113	117,941,428	447.0
Metals and Metal Compounds Only					
Wastewater Treatment (excluding POTWs) <sup>c</sup>	3,668,502	3,695,289	6,074,558	2,406,056	65.6
Metals and Metal Compounds Only					
Transfers to POTWs <sup>d</sup>	2,516,717	2,416,288	2,399,930	-116,787	-4.6
Metals and Metal Compounds Only					
Underground injection	17,150,771	10,790,626	14,265,756	-2,885,015	-16.8
Landfills/Disposal Surface Impoundments	220,810,041	240,513,813	251,854,306	31,044,265	14.1
Land Treatment	4,694,474	2,198,553	1,264,484	-3,429,990	-73.1
Other Land Disposal	13,535,338	11,402,005	10,314,727	-3,220,611	-23.8
Other Off-site Management	12,709,700	10,632,834	11,994,251	-715,449	-5.6
Transfers to Waste Broker for Disposal	6,794,093	4,715,221	7,377,734	583,641	8.6
Unknown <sup>e</sup>	1,614,459	1,587,429	4,601,113	2,986,654	185.0
Total Off-site Releases (Transfers Off-site to Disposal)	312,100,306	347,074,850	461,098,829	148,998,523	47.7
Total On- and Off-site Releases	2,616,362,705	2,521,450,816	2,577,553,084	-38,809,621	-1.5

**Note:** **On-site Releases** from Section 5 of Form R. **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R. **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. **Other On-site Waste Management** from Section 8. **Total 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 (for RCRA Subtitle C landfills) began in 1996 reporting year.

<sup>a</sup>“Storage only” (disposal code M10) indicates that the toxic chemical is sent off-site for storage because there is no known disposal method. Amounts reported as transferred to “storage only” are included as a form of disposal (off-site release). See Box 2-2.

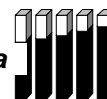
<sup>b</sup>Beginning in reporting year 1997, transfers to solidification/stabilization of metals and metal compounds (waste management code M41) are reported separately from transfers to solidification/stabilization of non-metal TRI chemicals (waste management code M40). Because this treatment method prepares a metal for disposal, but does not destroy it, such transfers are included as a form of disposal (off-site release). See Box 2-3. Reports under code M40 of metals and metal compounds have been included in solidification/stabilization of metals and metal compounds in this report.

<sup>c</sup>Beginning in reporting year 1997, transfers to wastewater treatment (excluding POTWs) of metals and metal compounds (waste management code M62) are reported separately from transfers to wastewater treatment of non-metal TRI chemicals (waste management code M61). Because wastewater treatment does not destroy metals, such transfers are included as a form of disposal (off-site release). See Box 2-3. Transfers of metals and metal compounds reported under code M61 have been included in transfers of metals and metal compounds to wastewater treatment.

<sup>d</sup>Reported as discharges to POTWs in Section 6.1 of Form R. EPA considers transfers of metals and metal compounds to POTWs as an off-site release because sewage treatment does not destroy the metal content of the waste material.

<sup>e</sup>“Unknown” (disposal code M99) indicates that a facility is not aware of the type of waste management used for the toxic chemical that is sent off-site. Amounts reported as “unknown” transfers are treated as a form of disposal (off-site release).





**Table 3-1. Comparison of TRI On-site and Off-site Releases and Transfers for Further Waste Management, 1995-1997, continued**

	1995	1996	1997	Change 1995-1997	
	Pounds	Pounds	Pounds	Pounds	Percent
<b>Other On-site Waste Management</b>					
Recycled On-site <sup>f</sup>	11,480,495,719	7,300,051,732	7,986,618,922	-3,493,876,797	-30.4
Energy Recovery On-site <sup>g</sup>	2,822,971,901	2,763,621,173	3,805,792,208	982,820,307	34.8
Treated On-site	7,039,799,031	6,152,076,079	7,012,922,513	-26,876,518	-0.4
Total Other On-site Waste Management <sup>h</sup>	21,343,266,651	16,215,748,984	18,805,333,643	-2,537,933,008	-11.9
<b>Transfers Off-site for Further Waste Management</b>					
Transfers to Recycling	2,449,540,356	2,396,768,626	2,381,458,528	-68,081,828	-2.8
Transfers to Energy Recovery	517,723,420	478,425,908	507,985,556	-9,737,864	-1.9
Transfers to Treatment	250,587,060	226,482,116	258,693,439	8,106,379	3.2
Transfers to POTWs	246,473,037	238,098,609	266,863,876	20,390,839	8.3
Other Off-site Transfers <sup>i</sup>	2,497,236	1,005,865	0	-2,497,236	-100.0
Total Transfers Off-site for Further Waste Management	3,466,821,109	3,340,781,124	3,415,001,399	-51,819,710	-1.5

**Note:** **On-site Releases** from Section 5 of Form R. **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R. **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. **Other On-site Waste Management** from Section 8. **Total 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 (for RCRA Subtitle C landfills) began in 1996 reporting year.

<sup>f</sup>Seven facilities in the food processing industry (SIC code 20) reported from 500 million pounds to 1 billion pounds each in on-site recycling of n-hexane in 1995, for a total 4,000,192,215 billion pounds. In 1996, these facilities reported no on-site recycling of n-hexane. On their 1996 Form Rs, these facilities also reported zero for on-site recycling of n-hexane for the prior year (1995). However, they have not revised their 1995 Form Rs. Another facility, Shintech Inc. in Freeport, TX, reported on-site recycling of vinyl chloride of 200,000 pounds in 1995 and 244,000 pounds in 1996. The facility has since revised these quantities to 200,000,000 pounds in 1995 and 244,000,000 pounds in 1996. The apparent facility errors and the facility revisions change on-site recycling to 7,680,103,504 pounds in 1995 and to 7,543,807,732 pounds in 1996. The change in on-site recycling changes to 306,515,418 pounds or 4.0%.

<sup>g</sup>One facility, TPI Petroleum in Ardmore, OK, reported on-site energy recovery for ethylene of 82,500,000 pounds in 1995, 36,250,000 pounds in 1996, and 422,000,000 pounds in 1997. The facility also reported on-site energy recovery for propylene of 12,900,000 pounds in 1995, 16,300,000 pounds in 1996, and 272,000,000 pounds in 1997. The facility has since revised these quantities to zero. Another facility, Shell Chemical Co. in Geismar, LA, reported on-site energy recovery for ethylene of 193,830,000 pounds in 1997. The facility has since revised this quantity to 13,000,000 pounds. These revisions change on-site energy recovery to 2,727,571,901 pounds in 1995, to 2,711,071,173 pounds in 1996, and to 2,930,962,208 pounds in 1997. The change in on-site energy recovery changes to 203,390,307 pounds or 7.5%.

<sup>h</sup>Apparent errors by seven facilities and revisions by three facilities change total other on-site waste management to 17,447,474,436 pounds in 1995, to 16,406,954,984 pounds in 1996, and to 17,930,503,643 pounds in 1997. The change in total other on-site waste management changes to 483,029,207 pounds or 2.8%.

<sup>i</sup>Other Off-site Transfers are transfers reported without a valid waste management code.



## **Off-site Releases**

From 1995 to 1997, off-site releases (transfers to disposal) increased substantially (47.7%) from 312.1 million pounds to 461.1 million pounds. Most of this increase—114.0 million pounds of a 149.0-million-pound increase—occurred from 1996 to 1997.

Transfers of metals and metal compounds to solidification/stabilization contributed the majority of the increase in off-site releases from 1995 to 1997. Such transfers totaled 26.4 million pounds in 1995, 57.7 million pounds in 1996, and 144.3 million pounds in 1997. This amounted to an increase of 117.9 million pounds, or 447.0%, from 1995 to 1997. More widespread awareness of the reporting requirements, as EPA added specific reporting codes for certain transfers of metals and metal compounds in 1997 (see Chapter 2, Box 2-3), may partly explain this increase.

Transfers of all TRI chemicals to landfills/disposal surface impoundments showed the second-largest absolute increase from 1995 to 1997, a 31.0 million pound increase. Landfills/disposal surface impoundments received 220.8 million pounds in 1995 and 251.9 million pounds in 1997, a 14.1% increase.

As seen in Table 3-1, other types of off-site releases increased or decreased by less than 5 million pounds each from 1995 to 1997.

## **Other On-site Waste Management, 1995-1997**

Other on-site waste management reported to TRI decreased from 21.34 billion pounds in 1995 to 18.81 billion pounds in 1997 (see Table 3-1). However, these data reflect large apparent reporting errors, including some facility submissions that were revised after the TRI data were “frozen” for preparation of this report. “TRI Chemicals Managed in Waste, 1995-1997,” below, further examines the effects of these reporting errors and revisions. Taking into account the

changes and errors, other on-site waste management increased 2.8% from 17.45 billion pounds in 1995 to 17.93 billion pounds in 1997.

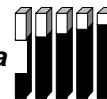
## **Transfers Off-site for Further Waste Management, 1995-1997**

Transfers of TRI chemicals off-site for further waste management decreased from 3.47 billion pounds in 1995 to 3.42 billion pounds in 1997, a 1.5% reduction (see Table 3-1). Transfers to recycling decreased from 2.45 billion pounds to 2.38 billion pounds, the largest absolute reduction (68.1 million pounds). Transfers to POTWs increased from 246.5 million pounds to 266.9 million pounds, the largest increase (20.4 million pounds).

## **Facilities and Forms, 1995-1997**

The number of facilities reporting to TRI and the number of forms they submitted both decreased by approximately 5% from 1995 to 1997, as shown in Table 3-1. In 1995, 22,664 facilities reported, declining to 21,490 in 1997. TRI facilities submitted 75,371 forms in 1995 and 71,670 in 1997. However, the number of facilities and forms for 1997 is likely to rise somewhat over time due to late reporting and to the resolution of outstanding data quality problems.

Although the total number of forms decreased, facilities submitted a greater number of Form A certification statements in 1997. Form A submissions, explained above and in Chapter 1, rose from 6,578 in 1995—the first year in which facilities could submit these forms—to 10,547 in 1997. This represented a 60.3% increase in Form A submissions. At the same time, submissions of Form Rs declined from 68,793 in 1995 to 61,123 in 1997, an 11.1% decrease. The increase in Form A submissions may reflect both increasing awareness of the reduced reporting option and an increasing number of facilities meeting the alternative threshold for one or more chemicals.



## TRI Chemicals Managed in Waste, 1995-1997

From 1995 to 1997, the quantities of TRI chemicals that facilities managed in production-related waste decreased from 27.49 billion pounds to 24.73 billion pounds. As shown in Table 3-2, this amounted to a 10.0% reduction. However, these quantities include apparent facility errors in on-site recycling and on-site energy recovery data that substantially affect overall totals. These facility reporting issues are described below. Taking into account the errors and changes, production-related waste managed would total 23.59 billion pounds in 1995 and 23.85 billion pounds in 1997, an increase of 1.1%.

As shown in Table 3-2, facilities reported on-site recycling of 11.48 billion pounds in 1995, dropping to 7.30 billion pounds in 1996, and then rising to 7.99 billion pounds in 1997. However, apparent facility errors and late revisions would change this large reduction to an increase. In 1995, seven food processing facilities (Standard Industrial Classification code 20) reported on-site recycling of 500 million to 1 billion pounds each of n-hexane, a chemical added to TRI in the 1995 reporting year. Together, their 1995 on-site recycling of n-hexane totaled 4.00 billion pounds. In 1996 and 1997, these facilities reported no on-site recycling of n-hexane. TRI facilities report production-related waste quantities for both the prior year and current year (along with projections for the following two years). As noted in the *1996 TRI Data Release*<sup>1</sup>, these facilities reported on their 1996 TRI Form Rs zero amounts of on-site recycling of n-hexane for the prior year (1995), but did not revise their 1995 submissions. Such changes generally indicate that facilities have revised their interpretation of on-site recycling. Currently, there are no TRI regulatory definitions of recycling, and facilities may

use their own interpretations for purposes of reporting to TRI. Some facilities have chosen to restrict their interpretation of on-site recycling to cover a very limited set of activities. Therefore, quantities that may have been reported as amounts undergoing waste management activities in early years are not reported on the Form R in subsequent years and are, thus, not in the TRI database. These changes in interpretations do not represent a change in guidance by EPA on how to report recycling. Because the seven food processing facilities did not revise their 1995 submissions, the large amounts of on-site recycling they reported in 1995 remain in the TRI data.

Furthermore, another facility reported on-site recycling of 200,000 pounds of vinyl chloride in 1995, 244,000 pounds in 1996, and 243.8 million pounds in 1997. This facility revised its 1995 and 1996 submissions after the TRI database was “frozen” for preparation of this report. The revised amounts were 200.0 million pounds in 1995 and 244.0 million pounds in 1996. This revision eliminates an apparent increase for this facility from 1995 to 1997 of 241.8 million pounds in on-site recycling.

Therefore, excluding the 1995 reporting of on-site recycling of n-hexane by the seven food processors and incorporating the revised submission for vinyl chloride, on-site recycling would show an increase from 7.68 billion pounds in 1995 to 7.99 billion pounds in 1997. This would constitute a 4.0% increase from 1995 to 1997, rather than the 30.4% reduction shown in Table 3-2.

On-site energy recovery increased by nearly 1 billion pounds from 1995 to 1997, as shown in Table 3-2, with facilities reporting 2.82 billion pounds in 1995 and 3.81 billion pounds in 1997, an increase of 34.8%. However, one facility that reported combustion for energy recovery of 193.8 million pounds of ethylene in 1997 revised its submission after the TRI data were “frozen” for this report. The facility’s revised report for on-site energy recovery of

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<sup>1</sup>1996 Toxics Release Inventory Public Data Release—Ten Years of Right-to-Know: Industry Sector Analyses, US EPA, Office of Pollution Prevention and Toxics, EPA 745-R-98-018, December 1998.



### Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

**Table 3-2. Quantities of TRI Chemicals in Waste, 1995-1997**

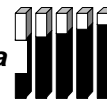
Waste Management Activity	1995 Pounds	1996 Pounds	1997 Pounds
Recycled On-site <sup>a</sup>	11,480,495,719	7,300,051,732	7,986,618,922
Recycled Off-site	2,541,332,998	2,454,579,937	2,390,787,879
Energy Recovery On-site <sup>b</sup>	2,822,971,901	2,763,621,173	3,805,792,208
Energy Recovery Off-site	503,525,690	510,546,386	525,610,064
Treated On-site	7,039,799,031	6,152,076,079	7,012,922,513
Treated Off-site	562,359,889	504,708,015	536,021,338
Quantity Released On- and Off-site	2,536,870,344	2,458,897,799	2,467,643,821
Total Production-related Waste Managed <sup>c</sup>	27,487,355,572	22,144,481,121	24,725,396,745
Non-Production-related Waste Managed	34,042,055	30,970,905	37,761,187
Waste Management Activity	Change 1995-1996 Percent	Change 1996-1997 Percent	Change 1995-1997 Percent
Recycled On-site <sup>a</sup>	-36.4	9.4	-30.4
Recycled Off-site	-3.4	-2.6	-5.9
Energy Recovery On-site <sup>b</sup>	-2.1	37.7	34.8
Energy Recovery Off-site	1.4	3.0	4.4
Treated On-site	-12.6	14.0	-0.4
Treated Off-site	-10.3	6.2	-4.7
Quantity Released On- and Off-site	-3.1	0.4	-2.7
Total Production-related Waste Managed <sup>c</sup>	-19.4	11.7	-10.0
Non-Production-related Waste Managed	-9.0	21.9	10.9

**Note:** All data taken from Section 8 of Form R for year indicated.

<sup>a</sup>Seven facilities in the food processing industry (SIC code 20) reported from 500 million pounds to 1 billion pounds each in on-site recycling of n-hexane in 1995, for a total 4,000,192,215 billion pounds. In 1996, these facilities reported no on-site recycling of n-hexane. On their 1996 Form Rs, these facilities also reported zero for on-site recycling of n-hexane for the prior year (1995). However, they have not revised their 1995 Form Rs. Another facility, Shintech Inc. in Freeport, TX, reported on-site recycling of vinyl chloride of 200,000 pounds in 1995 and 244,000 pounds in 1996. The facility has since revised these quantities to 200,000,000 pounds in 1995 and 244,000,000 pounds in 1996. The apparent facility errors and the facility revisions change on-site recycling to 7,680,103,504 pounds in 1995 and to 7,543,807,732 pounds in 1996. The percentage change in on-site recycling changes to -1.8% for 1995-1996, to 5.9% for 1996-1997, and to 4.0% for 1995-1997.

<sup>b</sup>One facility, TPI Petroleum in Ardmore, OK, reported on-site energy recovery for ethylene of 82,500,000 pounds in 1995, 36,250,000 pounds in 1996, and 422,000,000 pounds in 1997. The facility also reported on-site energy recovery for propylene of 12,900,000 pounds in 1995, 16,300,000 pounds in 1996, and 272,000,000 pounds in 1997. The facility has since revised these quantities to zero. Another facility, Shell Chemical Co. in Geismar, LA, reported on-site energy recovery for ethylene of 193,830,000 pounds in 1997. The facility has since revised this quantity to 13,000,000 pounds. These revisions change on-site energy recovery to 2,727,571,901 pounds in 1995, 2,711,071,173 pounds in 1996, and 2,930,962,208 pounds in 1997. The percentage change in on-site energy recovery changes to -0.6% for 1995-1996, to 8.1% for 1996-1997, and to 7.5% for 1995-1997.

<sup>c</sup>Apparent errors by seven facilities and revisions by three facilities change total production-related waste managed to 23,591,563,357 pounds in 1995, 22,335,687,121 pounds in 1996, and 23,850,566,745 pounds in 1997. The percentage change in total production-related waste managed changes to -5.3% for 1995-1996, to 6.8% for 1996-1997, and to 1.1% for 1995-1997.



ethylene totals 13.0 million pounds. This facility thus shows an increase from 1995 to 1997 of 8.5 million pounds instead of 189.3 million pounds. Another facility reported a total of 95.4 million pounds of on-site energy recovery of ethylene and propylene in 1995 and 694.0 million pounds in 1997. This facility also revised its submissions after the cut-off for inclusion in this report, changing its 1995 and 1997 amounts for both chemicals to zero. The revision eliminates an increase of 598.6 million pounds from 1995 to 1997. Taking into account these facility revisions, on-site energy recovery would increase 7.5% from 2.73 billion in 1995 to 2.93 billion in 1997.

Off-site energy recovery also increased, from 503.5 million pounds to 525.6 million pounds, or 4.4%.

All other waste management methods decreased from 1995 to 1997. These included a reduction in off-site recycling from 2.54 billion pounds to 2.39 billion pounds and a reduction in quantity released on- and off-site from 2.54 billion pounds to 2.47 billion pounds. Smaller decreases appeared in both on-site treatment (from 7.04 billion pounds to 7.01 billion pounds) and off-site treatment (from 562.4 million pounds to 536.0 million pounds).

A few facilities have reported substantial changes over time in on-site treatment. Two facilities with the same parent company reported no on-site treatment of creosote until 1996, when each reported a relatively small quantity. From 1996 to 1997, on-site treatment of creosote increased at the two facilities from 3.4 million pounds to 583.9 million pounds, in one case, and from 784,000 pounds to 104.9 million pounds in the other.

Another facility reported 220.8 million pounds of on-site treatment of phosphoric acid in 1995. This facility reported no on-site treatment of phosphoric acid in subsequent years, but instead reported substantial

quantities of on-site recycling of the chemical (110.6 million pounds in 1996 and 200.9 million pounds in 1997).

## 1988 and 1995-1997 National Overview

The “core” chemicals description in the introduction to this chapter explains the differences in coverage of analyses in this section with those in the 1995-1997 section above.

### On- and Off-site Releases, 1988 and 1995-1997

For the 1988-1997 “core” chemicals, TRI facilities have reduced their total on- and off-site releases by 42.8% since the 1988 baseline year. As shown in Table 3-3, releases declined from 3.40 billion pounds in 1995 to 1.94 billion pounds in 1997—a decrease of 1.45 billion pounds. Figure 3-1 illustrates the change by type of release.

#### On-site Releases

Nearly all of the change in total releases was attributable to on-site releases, which constituted more than 87% of the total in 1988, the baseline year. In 1988, facilities reported 2.97 billion pounds of on-site releases. By 1997, on-site releases decreased to 1.51 billion pounds, a reduction of 1.46 billion pounds or 49.2%. (See Table 3-3.)

Air emissions represented the largest component of the reduction in on-site releases of “core” chemicals, falling 55.0% from 2.18 billion pounds in 1988 to just under 1 billion pounds in 1997. Both fugitive and point source emissions contributed to the reduction in air emissions. Fugitive emissions decreased by a greater percentage (64.7%, or 441.0 million pounds) and point source emissions by the larger amount (758.8 million pounds or 50.6%).



### Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

**Table 3-3. Comparison of TRI On-site and Off-site Releases, Other On-site Waste Management, and Transfers Off-site for Further Waste Management, 1988 and 1994-1996**

	1988	1995	1996	1997	Change 1988-1997	
	Number	Number	Number	Number	Number	Percent
Total Facilities	20,458	20,605	20,103	19,597	-861	-4.2
Total Forms	62,763	62,586	60,844	60,095	-2,668	-4.3
Form Rs	62,763	57,305	54,835	51,534	-11,229	-17.9
Form As	--	5,281	6,009	8,561	--	--
	Pounds	Pounds	Pounds	Pounds	Pounds	Percent
<b>On-site Releases</b>						
Total Air Emissions	2,182,164,856	1,196,552,574	1,094,173,553	982,349,489	-1,199,815,367	-55.0
Fugitive Air Emissions	681,219,379	305,099,241	268,675,527	240,211,769	-441,007,610	-64.7
Point Source Air Emissions	1,500,945,477	891,453,333	825,498,026	742,137,720	-758,807,757	-50.6
Surface Water Discharges	164,551,897	36,606,449	44,278,020	61,439,148	-103,112,749	-62.7
Underground Injection	161,969,132	139,949,446	118,197,169	126,462,808	-35,506,324	-21.9
On-site Land Releases	459,276,400	304,111,147	323,317,451	338,768,345	-120,508,055	-26.2
Total On-site Releases	2,967,962,285	1,677,219,616	1,579,966,193	1,509,019,790	-1,458,942,495	-49.2
<b>Off-site Releases</b>						
Storage Only <sup>a</sup>	13,834,620	2,060,447	1,229,153	6,359,857	-7,474,763	-54.0
Solidification/Stabilization <sup>b</sup>	29,534,134	26,383,685	57,678,733	144,321,621	114,787,487	388.7
Metals and Metal Compounds Only						
Wastewater Treatment (excluding POTWs) <sup>c</sup>	4,555,460	3,668,502	3,695,289	6,062,266	1,506,806	33.1
Metals and Metal Compounds Only						
Transfers to POTWs <sup>d</sup>	9,569,221	2,516,717	2,416,288	2,399,930	-7,169,291	-74.9
Metals and Metal Compounds Only						
Underground Injection	8,962,004	12,515,674	9,064,936	10,872,188	1,910,184	21.3
Landfills/Disposal Surface Impoundments	267,277,612	210,451,136	221,601,081	232,612,295	-34,665,317	-13.0
Land Treatment	2,786,071	1,142,368	534,853	658,867	-2,127,204	-76.4
Other Land Disposal	9,646,794	11,587,568	6,053,151	7,997,899	-1,648,895	-17.1
Other Off-site Management	39,503,355	10,813,964	9,301,379	10,119,569	-29,383,786	-74.4
Transfers to Waste Broker for Disposal	30,401,909	5,047,986	4,351,938	7,069,318	-23,332,591	-76.7
Unknown <sup>e</sup>	11,833,224	1,518,581	1,492,591	4,376,547	-7,456,677	-63.0
Total Off-site Releases	427,904,404	287,706,628	317,419,392	432,850,357	4,945,953	1.2
Total On- and Off-site Releases	3,395,866,689	1,964,926,244	1,897,385,585	1,941,870,147	-1,453,996,542	-42.8

**Note:** Does not include delisted chemicals, chemicals added in 1990, 1991, 1994 and 1995, aluminum oxide, ammonia, hydrochloric acid and sulfuric acid. **On-site Releases** from Section 5 of Form R. **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R. **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. **Other On-site Waste Management** from Section 8. **Transfers Off-site for Further Waste Management** from Section 6 (excluding transfers off-site to disposal) of Form R. Form A certification statement reporting began in 1995 reporting year. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year. **Other On-site Waste Management** began in 1991 reporting year.

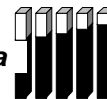
<sup>a</sup>“Storage only” (disposal code M10) indicates that the toxic chemical is sent off-site for storage because there is no known disposal method. Amounts reported as transferred to “storage only” are included as a form of disposal (off-site release). See Box 2-2.

<sup>b</sup>Beginning in reporting year 1997, transfers to solidification/stabilization of metals and metal compounds (waste management code M41) are reported separately from transfers to solidification/stabilization of non-metal TRI chemicals (waste management code M40). Because this treatment method prepares a metal for disposal, but does not destroy it, such transfers are included as a form of disposal (off-site release). See Box 2-3. Reports under code M40 of metals and metal compounds have been included in solidification/stabilization of metals and metal compounds in this report.

<sup>c</sup>Beginning in reporting year 1997, transfers to wastewater treatment (excluding POTWs) of metals and metal compounds (waste management code M62) are reported separately from transfers to wastewater treatment of non-metal TRI chemicals (waste management code M61). Because wastewater treatment does not destroy metals, such transfers are included as a form of disposal (off-site release). See Box 2-3. Transfers of metals and metal compounds reported under code M61 have been included in transfers of metals and metal compounds to wastewater treatment.

<sup>d</sup>Reported as discharges to POTWs in Section 6.1 of Form R. EPA considers transfers of metals and metal compounds to POTWs as an off-site release because sewage treatment does not destroy the metal content of the waste material.

<sup>e</sup>“Unknown” (disposal code M99) indicates that a facility is not aware of the type of waste management used for the toxic chemical that is sent off-site. Amounts reported as “unknown” transfers are treated as a form of disposal (off-site release).



**Table 3-3. Comparison of TRI On-site and Off-site Releases, Other On-site Waste Management, and Transfers Off-site for Further Waste Management, 1988 and 1994-1996, continued**

	1988	1995	1996	1997	Change 1988-1997	
	Pounds	Pounds	Pounds	Pounds	Pounds	Percent
<b>Other On-site Waste Management</b>						
Recycled On-site <sup>f</sup>	--	6,073,265,292	6,188,507,173	6,734,896,573	--	--
Energy Recovery On-site <sup>g</sup>	--	2,674,181,626	2,587,450,531	3,551,929,018	--	--
Treated On-site	--	4,770,448,186	4,426,369,290	4,523,398,161	--	--
Total Other On-site Waste Management <sup>h</sup>	--	13,517,895,104	13,202,326,994	14,810,223,752	--	--
<b>Transfers Off-site for Further Waste Management</b>						
Transfers to Recycling	--	2,389,565,522	2,341,841,917	2,329,692,339	--	--
Transfers to Energy Recovery	--	489,222,790	447,517,006	470,003,572	--	--
Transfers to Treatment	335,109,834	201,314,913	185,584,598	215,350,168	-119,759,666	-35.7
Transfers to POTWs	245,238,468	151,340,511	139,177,537	157,708,721	-87,529,747	-35.7
Other Off-site Transfers <sup>i</sup>	43,473,226	2,218,626	779,132	0	-43,473,226	-100.0
Total Transfers Off-site for Further Waste Management	--	3,233,662,362	3,114,900,190	3,172,754,800	--	--

**Note:** Does not include delisted chemicals, chemicals added in 1990, 1991, 1994 and 1995, aluminum oxide, ammonia, hydrochloric acid and sulfuric acid. **On-site Releases** from Section 5 of Form R. **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R. **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. **Other On-site Waste Management** from Section 8. **Transfers Off-site for Further Waste Management** from Section 6 (excluding transfers off-site to disposal) of Form R. Form A certification statement reporting began in 1995 reporting year. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year. **Other On-site Waste Management** began in 1991 reporting year.

<sup>f</sup> One facility, Shintech Inc. in Freeport, TX, reported on-site recycling of vinyl chloride of 200,000 pounds in 1995 and 244,000 pounds in 1996. The facility has since revised these quantities to 200,000,000 pounds in 1995 and 244,000,000 pounds in 1996. These revisions change on-site recycling to 6,273,065,292 pounds in 1995 and to 6,432,263,173 pounds in 1996.

<sup>g</sup> One facility, TPI Petroleum in Ardmore, OK, reported on-site energy recovery for ethylene of 82,500,000 pounds in 1995, 36,250,000 pounds in 1996, and 422,000,000 pounds in 1997. The facility also reported on-site energy recovery for propylene of 12,900,000 pounds in 1995, 16,300,000 pounds in 1996, and 272,000,000 pounds in 1997. The facility has since revised these quantities to zero. Another facility, Shell Chemical Co. in Geismar, LA, reported on-site energy recovery for ethylene of 193,830,000 pounds in 1997. The facility has since revised this quantity to 13,000,000 pounds. These revisions change on-site energy recovery to 2,578,781,626 pounds in 1995, to 2,534,900,531 pounds in 1996, and to 2,677,099,018 pounds in 1997.

<sup>h</sup> Revisions by three facilities change total other on-site waste management to 13,622,295,104 pounds in 1995, to 13,393,532,994 pounds in 1996, and to 13,935,393,752 pounds in 1997.

<sup>i</sup> Other Off-site Transfers are transfers reported without a valid waste management code.

On-site land releases decreased 120.5 million pounds from 1988 to 1997, the second-largest contribution to the overall reduction in on-site releases. On-site land releases totaled 459.3 million pounds in 1988 and 338.8 million pounds in 1997. However, these releases have increased from 304.1 million pounds since 1995.

In 1988, facilities reported comparable amounts of surface water discharges (164.6 million pounds) and underground injection (162.0 million pounds). Surface water discharges decreased substantially in the earlier years, dropping to 36.6 million pounds by 1995, and have since increased to 61.4 million pounds. This

constituted a 62.7% reduction for the full 1988-1997 period, despite the recent increases. In contrast, underground injection declined relatively steadily but more slowly, to 126.5 million pounds in 1997, a 21.9% reduction since 1988.

### **Off-site Releases**

Off-site releases have nearly doubled as a percentage of all releases since 1988 both because of the substantial reductions in on-site releases and because off-site releases have increased in recent years. (Off-site releases represented 12.6% of total on- and off-site releases in 1988, rising to 22.3% in 1997.)

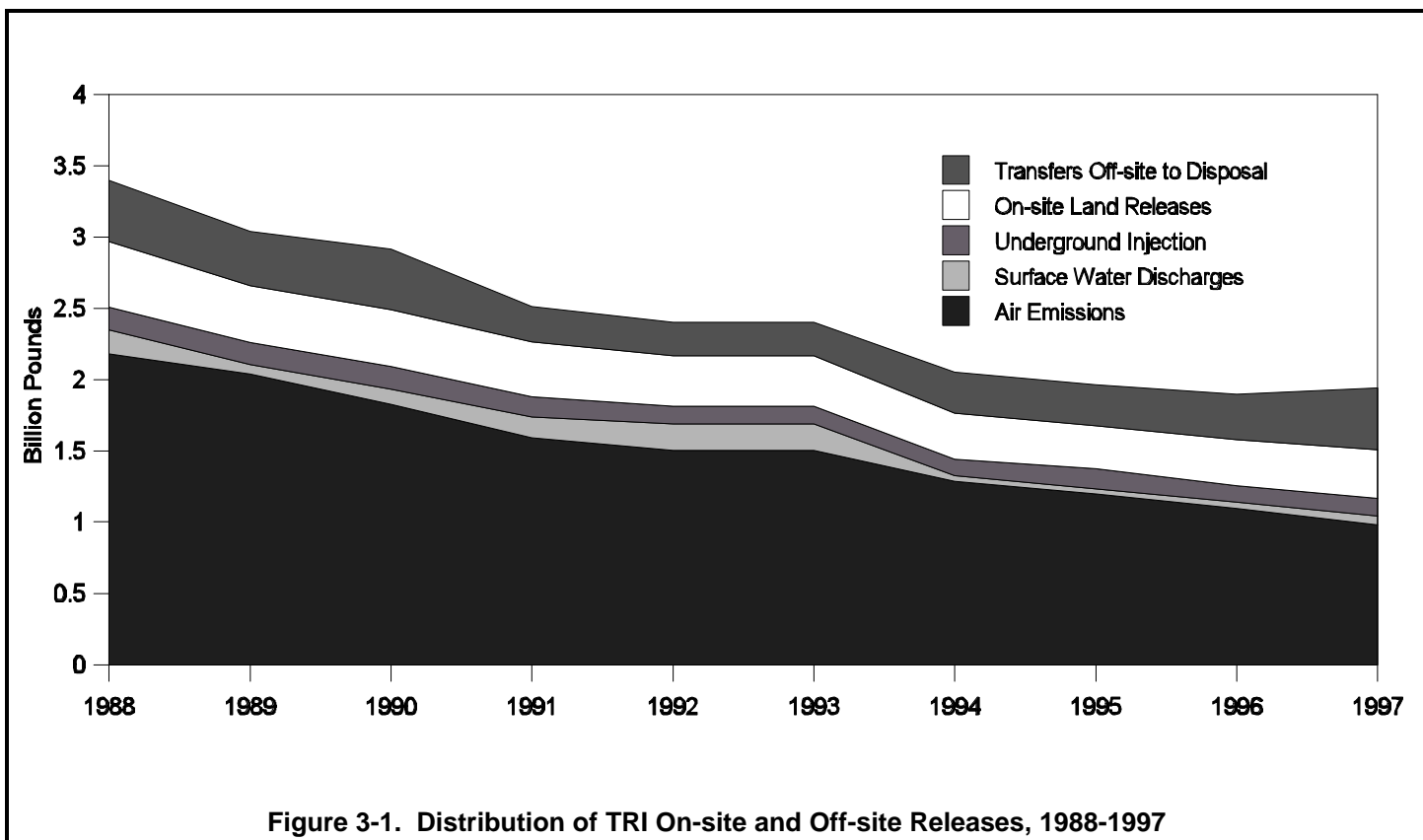


Figure 3-1. Distribution of TRI On-site and Off-site Releases, 1988-1997

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

Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs

As shown in Table 3-3, off-site releases (transfers off-site to disposal, including certain types of transfers of metals and metal compounds, explained above and in Chapter 2) decreased from 427.9 million pounds in 1988 to 287.7 million pounds in 1995. However, this total increased to 432.9 million pounds by 1997. The overall change (1988 to 1997) amounted to an increase of 4.9 million pounds or 1.2%. Figure 3-1 also shows the increase in off-site releases in recent years.

Much of the increase in off-site releases occurred in solidification/stabilization of metals and metal compounds in preparation for disposal, which increased from 29.5 million pounds in 1988 to 144.3 million pounds in 1997. (Although reporting codes for these transfers changed in 1997, comparable data can be distinguished using the applicable codes for earlier years.) The resulting increase of 114.8 million pounds amounts to a percentage change of 388.7%.

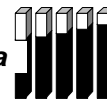
Off-site underground injection also increased, from nearly 9.0 million pounds in 1988 to 10.9 million pounds in 1997, a 21.3% increase.

Some types of transfers to disposal that show overall reductions from 1988 to 1997 have been increasing since 1995. An example is the reduction of 34.7 million pounds in transfers to landfills/disposal surface impoundments. This reduction consisted of a 56.8 million-pound reduction from 1988 to 1995 and a 22.2 million-pound increase since 1995.

### Other On-site Waste Management, 1988 and 1995-1997

TRI did not begin collecting on-site waste management data until 1991. For the 1988-1997 “core” chemicals, Table 3-3 presents on-site waste management data for 1995 through 1997. (Data for





the 1991-1997 “core” chemicals are analyzed in “TRI Chemicals Managed in Waste,” later in this chapter.) Other on-site waste management increased from 13.52 billion pounds in 1995 to 14.81 billion pounds in 1997. Information discussed in “TRI Chemicals Managed in Waste, 1995-1997,” earlier in this chapter, concerning food processing facilities with large apparent errors in 1995 reporting of on-site recycling of n-hexane does not affect data in Table 3-3 because n-hexane was added to TRI in reporting year 1995. Other facility reporting changes mentioned in “TRI Chemicals Managed in Waste, 1995-1997” do apply. When these changes are taken into account, total other on-site waste management of the “core” chemicals in Table 3-3 increased from 13.62 billion pounds in 1995 to 13.94 billion pounds in 1997.

Taking facility revisions into account, on-site recycling would increase from 6.27 billion pounds in 1995 to 6.73 billion pounds in 1997, and on-site energy recovery would increase from 2.58 billion pounds in 1995 to 2.68 billion pounds in 1997. The facility changes discussed in this chapter do not affect on-site treatment presented in Table 3-3, which decreased from 4.77 billion pounds in 1995 to 4.52 billion pounds in 1997.

### **Transfers Off-site for Further Waste Management, 1988 and 1995-1997**

Reporting of transfers to recycling and energy recovery also did not begin until 1991. As shown in Table 3-3, from 1995 to 1997, transfers to recycling decreased from 2.39 billion pounds to 2.33 billion pounds, and transfers to energy recovery decreased from 489.2 million pounds to 470.0 million pounds. Transfers off-site to treatment and to POTWs both decreased by 35.7% from 1988 to 1997. Transfers to treatment decreased from 335.1 million pounds to 215.4 million pounds, and transfers to POTWs decreased from 245.2 million pounds to 157.7 million pounds.

## **On- and Off-site Releases by State**

### **Releases by State, 1995-1997**

Thirty-five states and territories reported decreases in total on- and off-site releases from 1995 to 1997. Table 3-4 compares the on- and off-site releases reported by each state and territory for 1995-1997.

Although Texas facilities reported the largest total releases in all three years, Texas was also the state with the largest absolute reduction, from 304.3 million pounds in 1995 to 261.7 million pounds in 1997. Alabama ranked second with a reduction from 114.8 million pounds in 1995 to 94.7 million pounds in 1997, a 20.1 million-pound reduction. The state with the third-largest decrease was Michigan, from 102.1 million pounds in 1995 to 85.3 million pounds in 1997, a difference of 16.8 million pounds. While Texas had a greater absolute reduction than either Alabama or Michigan, both Alabama and Michigan showed greater relative reductions: These three states made reductions of 14.0% (Texas), 17.5% (Alabama), and 16.5% (Michigan) from 1995 to 1997.

Three other states also reported reductions of more than 10 million pounds each: California (from 56.5 million pounds to 45.2 million pounds, a 20.1% reduction), New Mexico (from 45.0 million pounds to 34.2 million pounds, or 24.1%), and North Carolina (from 95.6 million pounds to 85.1 million pounds, or 11.0%).

In 20 states and territories, total on- and off-site releases increased from 1995 to 1997, as shown in Table 3-4. The largest increase occurred in Utah—from 78.6 million pounds to 103.7 million pounds. The increase in Utah amounted to 25.1 million pounds, or 31.9%. Arkansas ranked second with total releases rising from 37.8 million pounds to 59.7 million pounds, a 21.9-million-pound increase,

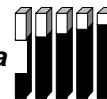


### Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

**Table 3-4. Change in Total TRI On-site and Off-site Releases, by State, 1995-1997**

State	Total On- and Off-site Releases			Change 1995-1997	
	1995	1996	1997	Pounds	Percent
	Pounds	Pounds	Pounds		
Alabama	114,807,068	103,196,031	94,671,279	-20,135,789	-17.5
Alaska	6,840,330	6,908,783	4,617,154	-2,223,176	-32.5
American Samoa	5,300	10,500	12,750	7,450	140.6
Arizona	40,396,303	47,445,509	31,418,499	-8,977,804	-22.2
Arkansas	37,780,514	39,786,535	59,722,263	21,941,749	58.1
California	56,533,155	52,153,616	45,150,612	-11,382,543	-20.1
Colorado	5,307,252	5,273,808	5,147,561	-159,691	-3.0
Connecticut	11,592,757	8,780,575	9,669,680	-1,923,077	-16.6
Delaware	4,645,733	3,762,862	3,506,833	-1,138,900	-24.5
District of Columbia	56,970	9,460	6,615	-50,355	-88.4
Florida	81,474,055	86,409,106	95,418,721	13,944,666	17.1
Georgia	60,854,061	61,867,573	71,881,510	11,027,449	18.1
Guam	3,100	3,000	0	-3,100	-100.0
Hawaii	656,692	540,267	452,405	-204,287	-31.1
Idaho	14,142,973	15,264,017	17,748,578	3,605,605	25.5
Illinois	118,575,390	114,562,379	127,601,051	9,025,661	7.6
Indiana	115,272,923	112,926,145	122,548,030	7,275,107	6.3
Iowa	37,723,908	34,278,645	34,196,111	-3,527,797	-9.4
Kansas	28,982,653	26,639,034	26,732,216	-2,250,437	-7.8
Kentucky	48,418,765	49,659,388	47,301,191	-1,117,574	-2.3
Louisiana	177,710,641	185,595,468	186,038,253	8,327,612	4.7
Maine	11,382,270	9,586,549	9,769,983	-1,612,287	-14.2
Maryland	18,269,513	13,281,767	13,699,344	-4,570,169	-25.0
Massachusetts	10,153,612	8,109,575	7,053,410	-3,100,202	-30.5
Michigan	102,118,319	93,654,977	85,281,920	-16,836,399	-16.5
Minnesota	24,559,273	22,100,820	20,166,465	-4,392,808	-17.9
Mississippi	61,075,877	58,101,938	66,166,071	5,090,194	8.3
Missouri	61,136,510	60,289,398	62,823,986	1,687,476	2.8
Montana	43,931,043	48,493,904	43,352,385	-578,658	-1.3
Nebraska	15,146,601	12,958,876	17,977,975	2,831,374	18.7
Nevada	3,923,017	3,787,560	4,435,113	512,096	13.1
New Hampshire	2,910,550	2,928,482	2,786,933	-123,617	-4.2
New Jersey	19,280,422	19,427,322	20,767,437	1,487,015	7.7
New Mexico	45,032,577	44,347,511	34,171,001	-10,861,576	-24.1
New York	42,856,132	37,275,675	38,585,647	-4,270,485	-10.0
North Carolina	95,583,525	93,772,231	85,066,946	-10,516,579	-11.0
North Dakota	2,932,925	2,325,812	2,422,425	-510,500	-17.4
Ohio	157,284,625	153,198,138	158,675,833	1,391,208	0.9
Oklahoma	30,020,447	26,523,428	24,798,930	-5,221,517	-17.4
Oregon	28,525,196	28,788,297	30,931,561	2,406,365	8.4
Pennsylvania	128,417,884	119,117,801	143,243,520	14,825,636	11.5
Puerto Rico	10,045,726	9,014,860	7,944,176	-2,101,550	-20.9
Rhode Island	3,380,617	2,364,544	2,178,884	-1,201,733	-35.5
South Carolina	59,317,406	57,714,436	58,444,739	-872,667	-1.5
South Dakota	4,086,038	3,730,917	4,216,583	130,545	3.2
Tennessee	110,805,280	106,641,343	106,881,877	-3,923,403	-3.5
Texas	304,333,619	265,287,724	261,709,979	-42,623,640	-14.0
Utah	78,642,834	86,705,010	103,717,225	25,074,391	31.9
Vermont	690,247	491,006	566,695	-123,552	-17.9
Virgin Islands	1,493,257	1,506,143	1,428,697	-64,560	-4.3
Virginia	59,799,318	58,649,180	57,928,069	-1,871,249	-3.1
Washington	29,533,885	28,953,141	31,830,466	2,296,581	7.8
West Virginia	32,145,313	28,920,716	24,770,942	-7,374,371	-22.9
Wisconsin	44,413,744	48,538,910	50,559,397	6,145,653	13.8
Wyoming	11,354,560	9,790,124	9,357,158	-1,997,402	-17.6
<b>Total</b>	<b>2,616,362,705</b>	<b>2,521,450,816</b>	<b>2,577,553,084</b>	<b>-38,809,621</b>	<b>-1.5</b>

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs.



or 58.1%. Pennsylvania facilities reported 128.4 million pounds in 1995 and 143.2 million pounds in 1997, the third-largest increase. The Pennsylvania increase amounted to 14.8 million pounds, or 11.5%.

Two other states also reported increases of more than 10 million pounds each: Florida (from 81.5 million pounds to 95.4 million pounds, a 17.1% increase) and Georgia (60.9 million pounds to 71.9 million pounds, an 18.1% increase).

### **Releases by State, 1988 and 1995-1997**

A total of 46 states and territories reported reductions in on- and off-site releases from 1988, TRI's baseline year, through 1997. In six states and the District of Columbia, total releases increased from 1988 to 1997. (Two territories, Guam and American Samoa, had no releases in either 1988 or 1997.) Table 3-5 shows total releases for each state and territory for 1988 and 1995-1997.

Of the three states with the largest absolute decreases in releases from 1988 to 1997—Texas, Louisiana, and California—California had the largest relative decrease, a 75.0% reduction. Louisiana recorded the second-largest relative decrease—49.8%—among the three states, and Texas ranked third with a percentage reduction of 44.3%. In absolute terms, Texas facilities reported the largest reduction among all states and territories, with a decrease of 143.0 million pounds (from 322.5 million pounds in 1988 to 179.5 million pounds in 1997). Louisiana ranked second for absolute reduction with a decrease of 125.0 million pounds (from 250.9 million pounds to 125.9 million pounds). California's reduction of 83.1 million pounds (from 110.8 million pounds in 1998 to 27.7 million pounds in 1997) ranked third among all states and territories.

Arkansas facilities reported the largest increase in total releases from 1988 to 1997. Arkansas' on- and off-site releases increased 8.2 million pounds (from 41.2 million pounds in 1988 to 49.4 million pounds in 1997). Montana ranked second with an increase of 6.7 million pounds (from 35.6 million pounds to 42.3 million pounds). The percentage increases in the two states were similar: 19.8% in Arkansas and 18.7% in Montana. In third-ranked Idaho, the increase from 1988 to 1997 was 5.5 million pounds (from 7.4 million pounds to 12.9 million pounds), or 75.4%.

### **TRI Chemicals Managed in Waste**

#### **TRI Chemicals Managed in Waste, 1991 and 1995-1997**

Table 3-6 displays waste management data for 1991 and 1995-1997. Quantities of TRI chemicals that facilities managed in production-related waste increased by 2.41 billion pounds, or 13.1%, from 1991 to 1997 for the “core” chemicals that were reportable under the same definitions throughout that period. Total production-related waste managed was 18.44 billion pounds in 1991 and 20.85 billion pounds in 1997. However, these totals include reporting errors by several facilities, described earlier in this chapter. Specifically, one facility revised its 1997 on-site energy recovery of ethylene from 198.8 million pounds to 13.0 million pounds. Similarly, another facility revised its on-site energy recovery of ethylene and propylene from a total of 95.4 million pounds in 1995 and 694.0 million pounds in 1997 to zero in both years. Revisions by these two facilities were made after the TRI database was “frozen” for preparation of this report. Taking into account these facility revisions, total production-related waste managed would increase from 18.44 billion pounds in 1991 to 19.98 billion pounds in 1997, an 8.3% increase instead of the 13.1% increase shown in Table 3-6.

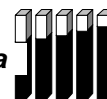


### Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

**Table 3-5. Change in Total TRI On-site and Off-site Releases, by State, 1988 and 1995-1997**

State	Total On- and Off-site Releases				Change 1988-1997	
	1988	1995	1996	1997	Pounds	Percent
	Pounds	Pounds	Pounds	Pounds		
Alabama	111,028,288	100,718,303	89,755,151	80,046,959	-30,981,329	-27.9
Alaska	3,714,569	2,158,743	1,683,698	779,045	-2,935,524	-79.0
American Samoa	0	0	0	0	0	--
Arizona	66,280,900	38,231,015	45,737,079	30,366,082	-35,914,818	-54.2
Arkansas	41,209,082	25,576,608	28,662,356	49,365,915	8,156,833	19.8
California	110,765,549	37,430,835	31,900,026	27,686,738	-83,078,811	-75.0
Colorado	15,743,170	3,498,632	3,187,197	3,140,756	-12,602,414	-80.1
Connecticut	38,695,117	9,077,490	6,923,797	8,039,341	-30,655,776	-79.2
Delaware	8,793,803	2,966,499	2,044,978	1,983,497	-6,810,306	-77.4
District of Columbia	750	56,970	9,460	6,615	5,865	782.0
Florida	61,723,562	52,716,383	52,335,599	57,069,195	-4,654,367	-7.5
Georgia	86,998,757	41,074,678	41,487,132	51,085,205	-35,913,552	-41.3
Guam	0	3,100	3,000	0	0	--
Hawaii	847,805	562,284	448,355	343,620	-504,185	-59.5
Idaho	7,354,669	10,104,545	10,822,282	12,896,810	5,542,141	75.4
Illinois	140,906,729	85,013,831	83,278,784	94,153,116	-46,753,613	-33.2
Indiana	185,247,435	93,917,359	94,092,870	104,991,463	-80,255,972	-43.3
Iowa	43,056,771	21,283,985	18,401,230	20,004,969	-23,051,802	-53.5
Kansas	30,568,775	17,830,664	17,490,154	18,924,948	-11,643,827	-38.1
Kentucky	66,940,117	34,020,056	33,211,448	35,762,162	-31,177,955	-46.6
Louisiana	250,914,798	123,279,321	130,718,359	125,927,705	-124,987,093	-49.8
Maine	15,560,704	6,854,179	5,563,644	6,199,758	-9,360,946	-60.2
Maryland	20,252,075	12,038,219	9,563,975	9,893,353	-10,358,722	-51.1
Massachusetts	32,272,283	8,767,782	6,961,476	6,151,913	-26,120,370	-80.9
Michigan	143,476,016	89,125,716	80,417,075	73,664,255	-69,811,761	-48.7
Minnesota	56,097,826	18,590,234	16,966,956	15,644,824	-40,453,002	-72.1
Mississippi	59,669,849	39,993,712	40,606,994	45,186,893	-14,482,956	-24.3
Missouri	91,212,597	50,532,629	50,090,864	53,527,759	-37,684,838	-41.3
Montana	35,630,465	42,644,621	47,219,566	42,300,684	6,670,219	18.7
Nebraska	17,123,549	11,281,445	8,718,338	13,605,148	-3,518,401	-20.5
Nevada	2,357,318	3,380,326	3,304,135	4,007,911	1,650,593	70.0
New Hampshire	13,975,470	2,237,152	2,209,854	2,283,059	-11,692,411	-83.7
New Jersey	48,472,938	14,062,698	12,751,690	13,704,143	-34,768,795	-71.7
New Mexico	30,427,754	43,436,083	42,722,128	32,484,581	2,056,827	6.8
New York	101,423,370	31,278,717	27,772,551	28,567,093	-72,856,277	-71.8
North Carolina	132,077,721	72,614,012	71,814,874	62,960,213	-69,117,508	-52.3
North Dakota	1,195,540	1,206,639	773,687	794,419	-401,121	-33.6
Ohio	205,909,168	126,540,795	122,794,004	129,906,251	-76,002,917	-36.9
Oklahoma	30,594,900	16,080,076	15,315,963	15,125,370	-15,469,530	-50.6
Oregon	21,647,495	22,293,296	23,625,573	24,607,403	2,959,908	13.7
Pennsylvania	136,379,977	97,080,117	87,337,471	95,904,026	-40,475,951	-29.7
Puerto Rico	12,869,935	8,871,807	7,937,300	7,176,652	-5,693,283	-44.2
Rhode Island	7,821,230	3,152,721	2,214,829	2,030,807	-5,790,423	-74.0
South Carolina	66,139,221	48,953,990	48,336,798	49,627,854	-16,511,367	-25.0
South Dakota	2,393,747	1,904,462	1,400,306	1,321,119	-1,072,628	-44.8
Tennessee	126,833,112	93,862,028	90,190,406	89,830,988	-37,002,124	-29.2
Texas	322,515,374	207,975,140	185,233,013	179,542,240	-142,973,134	-44.3
Utah	123,845,400	69,369,974	77,702,071	96,403,008	-27,442,392	-22.2
Vermont	1,750,190	561,015	321,889	331,282	-1,418,908	-81.1
Virgin Islands	2,592,912	1,235,660	1,232,275	1,184,171	-1,408,741	-54.3
Virginia	112,871,471	41,012,097	39,921,039	40,562,572	-72,308,899	-64.1
Washington	30,756,542	22,616,522	22,219,505	24,587,230	-6,169,312	-20.1
West Virginia	39,665,077	19,809,934	17,527,529	15,141,467	-24,523,610	-61.8
Wisconsin	62,524,196	34,716,561	33,066,022	33,707,244	-28,816,952	-46.1
Wyoming	16,740,621	1,324,584	1,358,830	1,330,316	-15,410,305	-92.1
<b>Total</b>	<b>3,395,866,689</b>	<b>1,964,926,244</b>	<b>1,897,385,585</b>	<b>1,941,870,147</b>	<b>-1,453,996,542</b>	<b>-42.8</b>

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs.



**Table 3-6. Quantities of TRI Chemicals in Waste, 1991 and 1995-1997**

Waste Management Activity	1991 Pounds	1995 Pounds	1996 Pounds	1997 Pounds
Recycled On-site <sup>a</sup>	5,985,973,407	6,145,245,573	6,242,868,341	6,817,156,707
Recycled Off-site	1,758,690,008	2,479,796,870	2,399,786,754	2,345,382,758
Energy Recovery On-site <sup>b</sup>	2,959,059,632	2,686,746,098	2,607,216,009	3,573,477,522
Energy Recovery Off-site	444,034,783	478,593,103	484,974,852	482,216,533
Treated On-site	4,366,768,798	4,780,288,913	4,456,052,065	5,393,631,217
Treated Off-site	436,600,143	401,761,876	369,581,534	387,945,400
Quantity Released On- and Off-site	2,487,504,603	1,901,102,367	1,848,081,558	1,851,990,231
Total Production-related Waste Managed <sup>c</sup>	18,438,631,374	18,873,534,800	18,408,561,113	20,851,800,368
Non-Production-related Waste Managed	22,371,864	31,737,153	28,994,000	35,540,726
Waste Management Activity	Change 1995-1996 Percent	Change 1996-1997 Percent	Change 1991-1997 Percent	
Recycled On-site <sup>a</sup>	1.6	9.2	13.9	
Recycled Off-site	-3.2	-2.3	33.4	
Energy Recovery On-site <sup>b</sup>	-3.0	37.1	20.8	
Energy Recovery Off-site	1.3	-0.6	8.6	
Treated On-site	-6.8	21.0	23.5	
Treated Off-site	-8.0	5.0	-11.1	
Quantity Released On- and Off-site	-2.8	0.2	-25.5	
Total Production-related Waste Managed <sup>c</sup>	-2.5	13.3	13.1	
Non-Production-related Waste Managed	-8.6	22.6	58.9	

**Note:** Does not include delisted chemicals, chemicals added in 1994 and 1995, ammonia, hydrochloric acid, and sulfuric acid. All data taken from Section 8 (Current Year) of Form R for year indicated.

<sup>a</sup>One facility, Shintech Inc. in Freeport, TX, reported on-site recycling of vinyl chloride of 200,000 pounds in 1995 and 244,000 pounds in 1996. The facility has since revised these quantities to 200,000,000 pounds in 1995 and 244,000,000 pounds in 1996. These revisions change on-site recycling to 6,345,045,573 pounds in 1995 and to 6,486,624,341 pounds in 1996. The percentage change in on-site recycling changes to 2.2% for 1995-1996 and to 5.1% for 1996-1997.

<sup>b</sup>One facility, TPI Petroleum in Ardmore, OK, reported on-site energy recovery for ethylene of 82,500,000 pounds in 1995, 36,250,000 pounds in 1996, and 422,000,000 pounds in 1997. The facility also reported on-site energy recovery for propylene of 12,900,000 pounds in 1995, 16,300,000 pounds in 1996, and 272,000,000 pounds in 1997. The facility has since revised these quantities to zero. Another facility, Shell Chemical Co. in Geismar, LA, reported on-site energy recovery for ethylene of 193,830,000 pounds in 1997. The facility has since revised this quantity to 13,000,000 pounds. These revisions change on-site energy recovery to 2,591,346,098 pounds in 1995, to 2,554,666,009 pounds in 1996, and to 2,698,647,522 pounds in 1997. The percentage change in on-site energy recovery changes to -1.4% for 1995-1996, to 5.6% for 1996-1997, and to -8.8% for 1991-1997.

<sup>c</sup>Revisions by three facilities change total production-related waste managed to 18,977,934,800 pounds in 1995, to 18,599,767,113 pounds in 1996, and to 19,976,970,368 pounds in 1997. The percent change in total production-related waste managed changes to -2.0% for 1995-1996, to 7.4% for 1996-1997, and to 8.3% for 1991-1997.

(One facility’s correction of on-site recycling of vinyl chloride from 200,000 pounds to 200.0 million pounds in 1995 and from 244,000 pounds to 244.0 million pounds in 1996 does not affect the overall increase in on-site recycling from 1991 to 1997. The apparent errors of seven food processing facilities in reporting 4.00 billion pounds of on-site recycling of n-hexane in 1995 do not affect data in Table 3-6 because n-hexane was not reportable in 1991.)

The two facilities’ revisions for ethylene and propylene affect on-site energy recovery totals. On-site energy recovery shown in Table 3-6 increased from 2.96 billion pounds in 1991 to 3.57 billion pounds in 1997. Taking into account the facility revisions, on-site energy recovery would decrease from 2.96 billion pounds in 1991 to 2.70 billion pounds in 1997, an 8.8% reduction instead of the 20.8% increase shown in Table 3-6.



Table 3-7. Quantities of TRI Chemicals in Waste, 1991 and 1996-1999

Waste Management Activity	1991		1996		1997		Projected			
							1998		1999	
	Pounds	Percent	Pounds	Percent	Pounds	Percent	Pounds	Percent	Pounds	Percent
Recycled On-site <sup>a</sup>	5,985,973,407	32.5	6,242,868,341	33.9	6,817,156,707	32.7	6,550,448,416	32.1	6,587,726,780	32.1
Recycled Off-site	1,758,690,008	9.5	2,399,786,754	13.0	2,345,382,758	11.2	2,315,250,122	11.3	2,358,369,887	11.5
Energy Recovery On-site <sup>b</sup>	2,959,059,632	16.0	2,607,216,009	14.2	3,573,477,522	17.1	3,626,058,263	17.8	3,725,091,138	18.2
Energy Recovery Off-site	444,034,783	2.4	484,974,852	2.6	482,216,533	2.3	443,267,812	2.2	442,720,481	2.2
Treated On-site	4,366,768,798	23.7	4,456,052,065	24.2	5,393,631,217	25.9	5,335,126,988	26.1	5,267,530,256	25.7
Treated Off-site	436,600,143	2.4	369,581,534	2.0	387,945,400	1.9	369,002,354	1.8	373,728,849	1.8
Quantity Released On- and Off-site	2,487,504,603	13.5	1,848,081,558	10.0	1,851,990,231	8.9	1,769,744,900	8.7	1,742,335,340	8.5
Total Production-related Waste Managed <sup>c</sup>	18,438,631,374	100.0	18,408,561,113	100.0	20,851,800,368	100.0	20,408,898,855	100.0	20,497,502,731	100.0

**Note:** Does not include delisted chemicals, chemicals added in 1994 and 1995, ammonia, hydrochloric acid, and sulfuric acid. Data from Section 8 of Form R. Data for 1991 from 1991 Form R, for 1996 from 1996 Form R, all other years from 1997 Form R.

<sup>a</sup>One facility, Shintech Inc. in Freeport, TX, reported on-site recycling of vinyl chloride of 244,000 pounds in 1996. The facility has since revised this quantity to 244,000,000 pounds. This changes on-site recycling to 6,486,624,341 pounds in 1996.

<sup>b</sup>One facility, TPI Petroleum in Ardmore, OK, reported on-site energy recovery for ethylene of 36,250,000 pounds in 1996 and 422,000,000 pounds in 1997 and projected 443,100,000 pounds for 1998 and 465,255,000 pounds for 1999. The facility also reported on-site energy recovery for propylene of 16,300,000 pounds in 1996 and 272,000,000 pounds in 1997 and projected 285,600,000 pounds for 1998 and 299,880,000 pounds for 1999. The facility has since revised these quantities to zero. Another facility, Shell Chemical Co. in Geismar, LA, reported on-site energy recovery for ethylene of 193,830,000 pounds in 1997 and projected 213,213,000 pounds for both 1998 and 1999. The facility has since revised these quantities to 13,000,000 pounds for each of the three years. These revisions change on-site energy recovery to 2,554,666,009 pounds in 1996, to 2,698,647,522 pounds in 1997, to 2,697,145,263 pounds projected for 1998, and to 2,759,743,138 pounds projected for 1999.

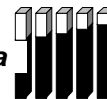
<sup>c</sup>Revisions by three facilities change total production-related waste managed to 18,599,767,113 pounds in 1996, to 19,976,970,368 pounds in 1997, to 19,479,985,855 pounds projected for 1998, and to 19,532,154,731 pounds projected for 1999. Distribution of waste management activities changes in 1996 to 34.9% recycled on-site, 12.9% recycled off-site, 13.7% energy recovery on-site, 2.6% energy recovery off-site, 24.0% treated on-site, 2.0% treated off-site, and 9.9% quantity released on- and off-site; in 1997 to 34.1% recycled on-site, 11.7% recycled off-site, 13.5% energy recovery on-site, 2.4% energy recovery off-site, 27.0% treated on-site, 1.9% treated off-site, and 9.3% quantity released on- and off-site; for 1998 (projected) to 33.6% recycled on-site, 11.9% recycled off-site, 13.8% energy recovery on-site, 2.3% energy recovery off-site, 27.4% treated on-site, 1.9% treated off-site, and 9.1% quantity released on- and off-site; and for 1999 (projected) to 33.7% recycled on-site, 12.1% recycled off-site, 14.1% energy recovery on-site, 2.3% energy recovery off-site, 27.0% treated on-site, 1.9% treated off-site, and 8.9% quantity released on- and off-site.

The largest absolute increase among waste management types occurred in on-site treatment, which rose from 4.37 billion pounds in 1991 to 5.39 billion pounds in 1997, an increase of 1.03 billion pounds (23.5%). The largest percentage increase occurred in off-site recycling, which increased 33.4% from 1.76 billion pounds in 1991 to 2.35 billion pounds in 1997 (a 831.2-million-pound increase).

Two other waste management practices also showed increases: Facilities reported 5.99 billion pounds of on-site recycling in 1991 and 6.82 billion pounds in

1997, a 13.9% increase. They also reported 444.0 million pounds of off-site energy recovery in 1991 and 482.2 million pounds in 1997, an 8.6% increase.

From 1991 to 1997, quantities released on- and off-site decreased by one-fourth (25.5%) from 2.49 billion pounds to 1.85 billion pounds. The only other reduction was reported in off-site treatment, which declined from 436.6 million pounds to 387.9 million pounds, an 11.1% decrease.



## Projected Quantities of TRI Chemicals Managed in Waste, 1991 and 1995-1999

TRI facilities projected relatively small reductions from 1997 levels in the production-related waste they expected to manage through 1999. As shown in Table 3-7, total production-related waste managed was expected to decline from 20.85 billion pounds in 1997 to 20.50 billion pounds in 1999. (These data cover the “core” chemicals that were reportable under the same definitions in years 1991-1997.) Facility revisions discussed throughout this chapter would change these totals to 19.98 billion pounds in 1997 and a projected 19.53 billion pounds in 1999. This would change the overall reduction expected from 1997 to 1999 from a projected 1.7% decrease to a 2.2% decrease.

As discussed in Chapter 2, information required by the Pollution Prevention Act (PPA) of 1990 can help facilities and the public assess progress in pollution prevention and in the management of TRI chemicals in waste. The data can be used to analyze trends in total quantities of TRI chemicals in waste to see if facilities are reducing the amount of waste generated. The data also can be used to examine trends in the quantities of TRI chemicals undergoing each waste management method to see whether facilities are making more environmentally preferable choices as established in the waste management hierarchy.

Taking into account the facility revisions, the quantity released on- and off-site would show a decrease from 13.5% of total production-related waste that facilities managed in 1991 to 9.3% in 1997. This was the largest change in the distribution of waste management methods. Reducing the proportion of TRI chemicals in waste that facilities release indicates improvement in their waste management practices. Releases represent the least desirable outcome in terms of the waste management hierarchy, described in

Chapter 2. Facilities projected a small further decrease in quantity released as a percentage of total production-related waste managed, to 8.9% by 1999.

However, facilities projected no significant improvement from 1997 to 1999 in the way they manage TRI chemicals in waste, recycling on-site about one-third (34.1% in 1997 and 33.7% in 1999) of the total and treating on-site about one-quarter (27.0% in both 1997 and 1999) of the total, again taking into account facility revisions previously described. Approximately 14% of total production-related waste managed would be combusted on-site for energy recovery in both years. Percentages in Table 3-7 show that these represent little overall change from the 1991 distribution. The most significant difference from 1991 to 1997 would be an increase in the percentage of production-related waste treated on-site. In the waste management hierarchy, however, treating toxic chemicals in waste is preferable only to releasing them.

## Chemical-specific Release and Waste Management Data

Table 3-8 presents on- and off-site releases and waste management data for all TRI chemicals on the current TRI chemical list for which reports have been received in at least one of the years 1988 and 1995-1997. Pesticides are denoted by an asterisk (\*) next to the chemical name. These are chemicals that are currently active ingredients in EPA’s Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
71751-41-2 *	Abamectin	97	2	0	9	0	0	9	0	9
		96	2	0	10	0	0	10	0	10
		95	2	0	16	0	0	16	0	16
		88	NR	NR	NR	NR	NR	NR	NR	NR
30560-19-1 *	Acephate	97	7	1,505	0	0	0	1,505	0	1,505
		96	5	1,505	0	0	0	1,505	1,400	2,905
		95	5	2,250	0	0	0	2,250	1,000	3,250
		88	NR	NR	NR	NR	NR	NR	NR	NR
75-07-0 *	Acetaldehyde	97	250	12,736,049	223,370	371,576	118,176	13,449,171	5,483	13,454,654
		96	250	12,597,164	198,955	468,662	16,800	13,281,581	2,463	13,284,044
		95	233	13,188,747	227,116	605,886	155,360	14,177,109	1,099	14,178,208
		88	66	6,949,249	98,236	2,219,105	194,958	9,461,548	24,930	9,486,478
60-35-5	Acetamide	97	6	250	1	1,863,202	0	1,863,453	0	1,863,453
		96	3	19	2	1,169,000	0	1,169,021	0	1,169,021
		95	3	8	0	920,000	0	920,008	0	920,008
		88	1	0	0	0	0	0	250	250
75-05-8	Acetonitrile	97	100	890,612	7,461	18,894,762	63	19,792,898	3,084,414	22,877,312
		96	101	1,023,121	11,900	22,826,712	48	23,861,781	548,193	24,409,974
		95	87	1,020,661	7,474	27,836,181	12	28,864,328	10,892	28,875,220
		88	67	2,194,739	42,223	16,739,010	1,790	18,977,762	416,333	19,394,095
98-86-2 *	Acetophenone	97	43	179,786	650	499,070	3,500	683,006	42,552	725,558
		96	42	179,306	734	474,202	2,738	656,980	15,950	672,930
		95	38	205,648	971	629,201	3,369	839,189	19,427	858,616
		88	NR	NR	NR	NR	NR	NR	NR	NR
62476-59-9 *	Acifluorfen, sodium salt	97	7	290	253	0	5	548	570,359	570,907
		96	4	226	7	0	5	238	0	238
		95	4	60	5	0	5	70	0	70
		88	NR	NR	NR	NR	NR	NR	NR	NR
107-02-8 *	Acrolein	97	19	81,130	298	71,990	0	153,418	175	153,593
		96	20	82,276	550	100,360	0	183,186	0	183,186
		95	21	71,302	4	83,465	0	154,771	0	154,771
		88	12	33,652	0	68,950	500	103,102	0	103,102
79-06-1 *	Acrylamide	97	77	17,278	6,355	7,074,021	305,545	7,403,199	26,290	7,429,489
		96	72	11,700	3,653	5,748,154	149,156	5,912,663	301,575	6,214,238
		95	80	19,077	1,929	6,120,154	235	6,141,395	3,083	6,144,478
		88	59	26,019	3,124	2,198,000	756	2,227,899	97,582	2,325,481

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



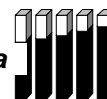


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
71751-41-2 *	Abamectin	97	0	0	0	0	1,900	131	9	2,040	0
		96	0	0	0	0	31	78	5	114	5
		95	0	0	0	0	106	5,582	16	5,704	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
30560-19-1 *	Acephate	97	20	0	0	0	11,000	11,580	944	23,544	0
		96	30	0	0	0	176,000	7,240	2,075	185,345	0
		95	10	0	0	0	183,000	15,728	1,409	200,147	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-07-0 *	Acetaldehyde	97	332,000	33	9,848,731	56,699	15,532,164	1,192,757	13,449,700	40,412,084	10,453
		96	178,600	39	12,220,037	144,266	21,749,308	657,436	13,257,781	48,207,467	4,196
		95	97,000	31,820	9,238,985	234,459	14,494,403	1,731,882	14,195,057	40,023,606	1,681
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
60-35-5	Acetamide	97	0	0	64,008	145	1	194	1,863,448	1,927,796	0
		96	0	0	98,900	0	1	184	1,170,002	1,269,087	0
		95	0	0	1,000	0	0	88	920,000	921,088	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-05-8	Acetonitrile	97	13,116,437	2,215,038	23,490,849	6,631,333	12,681,271	7,690,047	22,804,584	88,629,559	6,264
		96	22,263,727	1,736,000	24,163,715	7,124,819	13,290,669	4,802,882	24,401,040	97,782,852	10,624
		95	9,409,962	2,071,150	23,070,787	4,704,330	11,104,608	5,742,679	29,416,530	85,520,046	1,073
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
98-86-2 *	Acetophenone	97	1,800	5,743	30,262,873	278,450	1,003,454	397,022	747,016	32,696,358	1,078
		96	900	7,286	36,395,314	244,620	1,013,493	46,653	685,319	38,393,585	360
		95	920,000	9,710	23,649,642	301,212	1,313,510	35,062	886,301	27,115,437	517
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
62476-59-9 *	Acifluorfen, sodium salt	97	0	0	0	0	310	3,554	570,691	574,555	0
		96	0	0	0	0	90	674	238	1,002	10
		95	0	0	0	0	600	1,272	65	1,937	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
107-02-8 *	Acrolein	97	0	0	3,772,684	33,413	5,288,092	23	142,204	9,236,416	93
		96	0	0	3,641,691	27,729	6,126,756	39	175,281	9,971,496	83
		95	4,800	0	3,752,847	43,323	5,168,260	11,361	154,579	9,135,170	85
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
79-06-1 *	Acrylamide	97	2,266	3	86,000	13,306	144,607	219,594	7,427,483	7,893,259	4,010
		96	307	4	90,400	22,530	137,990	98,399	6,183,656	6,533,286	1,700
		95	4,037	0	820	43,304	314,544	210,283	6,146,220	6,719,208	3,980
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	
79-10-7	Acrylic acid	97	194	414,885	8,089	6,237,000	76,151	6,736,125	45,129	6,781,254
		96	185	421,620	3,171	5,168,000	67	5,592,858	56,159	5,649,017
		95	189	527,219	2,648	7,840,000	47	8,369,914	35,421	8,405,335
		88	158	800,046	16,646	22,262,010	15,950	23,094,652	134,139	23,228,791
107-13-1 *	Acrylonitrile	97	110	1,224,569	1,229	4,031,900	827	5,258,525	4,879	5,263,404
		96	109	1,294,318	590	3,595,236	302	4,890,446	6,639	4,897,085
		95	105	1,525,446	7,137	5,193,028	618	6,726,229	4,917	6,731,146
		88	113	4,796,161	6,531	4,562,713	2,150	9,367,555	151,450	9,519,005
15972-60-8 *	Alachlor	97	3	2,700	290	0	0	2,990	3,600	6,590
		96	2	2,340	330	0	0	2,670	4,100	6,770
		95	3	756	280	0	0	1,036	2,940	3,976
		88	NR	NR	NR	NR	NR	NR	NR	NR
116-06-3 *	Aldicarb	97	3	386	0	0	5	391	0	391
		96	4	301	0	0	5	306	0	306
		95	2	3,477	0	0	6	3,483	0	3,483
		88	NR	NR	NR	NR	NR	NR	NR	NR
28057-48-9	d-trans-Allethrin	97	1	0	0	0	0	0	0	0
		96	1	0	0	0	0	0	0	0
		95	1	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
107-18-6 *	Allyl alcohol	97	27	53,528	5,226	411,350	4	470,108	7,245	477,353
		96	32	58,620	4,962	374,263	0	437,845	134,595	572,440
		95	31	58,636	6,419	298,801	0	363,856	11,296	375,152
		88	NR	NR	NR	NR	NR	NR	NR	NR
107-11-9	Allylamine	97	3	1,662	0	0	0	1,662	0	1,662
		96	1	0	0	0	0	0	0	0
		95	No reports received							
		88	NR	NR	NR	NR	NR	NR	NR	NR
107-05-1	Allyl chloride	97	22	78,187	10	0	0	78,197	503	78,700
		96	20	80,148	9	0	0	80,157	0	80,157
		95	20	52,046	95	0	41	52,182	13	52,195
		88	20	149,369	430	250	200	150,249	747	150,996
7429-90-5 *	Aluminum (fume or dust)	97	326	1,589,904	42,374	0	2,213,496	3,845,774	8,278,292	12,124,066
		96	313	1,679,728	48,991	0	2,285,137	4,013,856	6,662,717	10,676,573
		95	320	1,981,028	36,699	250	1,872,483	3,890,460	6,108,552	9,999,012
		88	357	3,681,998	91,518	250	3,177,625	6,951,391	14,368,041	21,319,432

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds	
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds				
79-10-7	Acrylic acid	97	4,151,368	119,172	31,904,896	3,478,312	28,539,687	879,415	6,690,854	75,763,704	3,162	
		96	4,427,743	96,856	27,444,635	3,739,497	27,724,837	1,100,149	5,651,111	70,184,828	28,486	
		95	3,339,863	34,800	26,544,419	5,033,613	26,793,759	471,790	8,396,905	70,615,149	3,401	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
107-13-1 *	Acrylonitrile	97	12,690,465	58,092	5,300,722	198,012	10,143,286	1,170,267	5,329,623	34,890,467	1,602	
		96	12,680,622	527	3,485,381	316,652	10,465,855	1,053,032	4,914,795	32,916,864	2,592	
		95	12,408,043	69,716	3,342,652	666,245	10,633,989	1,125,461	6,765,974	35,012,080	8,105	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
15972-60-8 *	Alachlor	97	0	0	0	0	44,000	160,000	6,600	210,600	0	
		96	0	0	0	0	28,000	148,600	6,800	183,400	0	
		95	0	0	0	5,481	120,000	217,179	3,930	346,590	30,000	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
116-06-3 *	Aldicarb	97	0	0	0	0	502	28,107	382	28,991	0	
		96	0	0	0	0	505	32,359	324	33,188	0	
		95	0	0	0	0	580	20,011	3,472	24,063	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
28057-48-9	d-trans-Allethrin	97	0	0	0	0	0	0	0	0	0	
		96	0	0	0	0	0	0	0	0	0	
		95	0	0	0	0	0	0	0	0	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
107-18-6 *	Allyl alcohol	97	110,892	0	1,911,736	798,451	971,358	258,500	475,498	4,526,435	1	
		96	120,525	0	822,495	653,085	1,313,506	316,346	452,823	3,678,780	160	
		95	189,517	0	1,531,138	363,377	1,404,321	422,499	371,288	4,282,140	131	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
107-11-9	Allylamine	97	0	0	0	1,571	1,547	0	1,662	4,780	0	
		96	0	0	0	2	2	0	0	4	0	
		95	No reports received									
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
107-05-1	Allyl chloride	97	210,000	0	2,403,008	210,974	387,733	298,546	77,167	3,587,428	2,200	
		96	260,000	0	2,300,000	360	504,432	497,841	78,341	3,640,974	84	
		95	520,000	0	186,000	1,756	750,979	412,357	51,166	1,922,258	65	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7429-90-5 *	Aluminum (fume or dust)	97	13,981,740	26,584,429	0	91,568	19,350,982	227,033	10,994,583	71,230,335	155	
		96	15,384,573	21,724,879	0	88,161	18,105,328	156,758	9,452,933	64,912,632	2,652	
		95	15,378,165	24,147,206	0	164,604	15,628,491	332,192	8,050,539	63,701,197	690	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
1344-28-1	Aluminum oxide (fibrous forms)	97	51	38,451	755	0	428,680	467,886	10,338,111	10,805,997
		96	49	108,152	505	0	357,650	466,307	9,213,890	9,680,197
		95	58	133,902	2,805	0	593,000	729,707	2,790,419	3,520,126
		88	NR	NR	NR	NR	NR	NR	NR	NR
20859-73-8 *	Aluminum phosphide	97	1	0	0	0	0	0	0	0
		96	2	0	0	0	0	0	0	0
		95	1	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
834-12-8 *	Ametryn	97	4	2,161	42	0	0	2,203	0	2,203
		96	4	3,321	59	0	0	3,380	0	3,380
		95	5	836	83	0	5	924	250	1,174
		88	NR	NR	NR	NR	NR	NR	NR	NR
60-09-3	4-Aminoazo-benzene	97	2	0	0	6	0	6	0	6
		96	1	0	0	203	0	203	0	203
		95	1	0	0	64	0	64	0	64
		88	1	0	0	537	0	537	0	537
92-67-1	4-Aminobiphenyl	97	1	0	0	0	0	0	0	0
		96	1	0	0	2	0	2	0	2
		95	1	0	0	2	0	2	0	2
		88	1	10	0	4	0	14	0	14
33089-61-1 *	Amitraz	97	No reports received							
		96	1	0	0	0	0	0	0	0
		95	No reports received							
		88	NR	NR	NR	NR	NR	NR	NR	NR
7664-41-7 *	Ammonia	97	2,734	156,148,750	7,023,065	31,150,492	3,254,416	197,576,723	2,417,150	199,993,873
		96	2,820	157,315,279	8,084,104	24,374,638	3,226,185	193,000,206	1,924,662	194,924,868
		95	2,907	158,627,233	9,284,129	23,958,051	5,611,918	197,481,331	1,558,205	199,039,536
		88	NR	NR	NR	NR	NR	NR	NR	NR
62-53-3 *	Aniline	97	65	285,954	11,228	1,095,429	1,385	1,393,996	67,266	1,461,262
		96	68	219,092	16,217	835,298	781	1,071,388	20,321	1,091,709
		95	66	201,467	8,943	1,221,381	4,193	1,435,984	21,546	1,457,530
		88	68	712,769	16,105	3,582,975	12,822	4,324,671	346,206	4,670,877
90-04-0	o-Anisidine	97	7	1,461	76	0	0	1,537	4	1,541
		96	7	1,517	28	0	0	1,545	1	1,546
		95	7	1,031	74	0	0	1,105	3	1,108
		88	6	2,293	285	0	250	2,828	3	2,831

**Note: On-site Releases** from Section 5 of Form R. **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R. **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

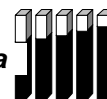


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Release On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
1344-28-1	Aluminum oxide (fibrous forms)	97	5,050,000	252,140	0	0	14,897	104,877	935,611	6,357,525	200
		96	175,000	16,300	0	22,000	3,900	38,695	1,528,879	1,784,774	2
		95	25,100	15,612	0	9,991	21,448	90,428	2,315,663	2,478,242	2
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
20859-73-8 *	Aluminum phosphide	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
834-12-8 *	Ametryn	97	25	0	0	0	38,200	16,000	1,744	55,969	0
		96	0	0	0	0	33,000	19,620	2,341	54,961	0
		95	0	0	0	0	108,500	12,502	256	121,258	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
60-09-3	4-Aminoazo-benzene	97	0	0	0	0	0	76	6	82	0
		96	0	0	0	0	0	99	203	302	0
		95	0	0	0	0	3	0	64	67	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
92-67-1	4-Aminobiphenyl	97	0	0	0	0	100,000	190	0	100,190	0
		96	0	0	0	0	91,000	103	2	91,105	0
		95	0	0	0	0	91,000	0	2	91,002	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
33089-61-1 *	Amitraz	97	No reports received								
		96	0	0	0	0	0	0	0	0	0
		95	No reports received								
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7664-41-7 *	Ammonia	97	348,336,500	9,620,303	118,146,876	112,444	290,578,256	16,712,554	194,820,109	978,327,042	714,157
		96	331,921,860	8,773,834	38,613,184	67,407	341,639,012	15,911,064	195,187,048	932,113,409	1,064,822
		95	201,942,857	12,037,786	44,641,891	72,879	306,563,524	18,597,950	197,430,169	781,287,056	1,102,315
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
62-53-3 *	Aniline	97	7,119,031	0	7,637,850	629,784	3,641,784	2,188,848	1,418,107	22,635,404	5,959
		96	8,838,234	0	6,189,043	315,069	3,608,917	1,485,999	1,095,812	21,533,074	256
		95	7,243,251	0	7,419,516	354,598	3,746,207	1,266,787	1,455,876	21,486,235	1,147
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
90-04-0	o-Anisidine	97	0	0	1,315	0	3,867	6,925	1,541	13,648	0
		96	0	0	1,465	0	3,992	6,251	1,546	13,254	0
		95	0	0	143	0	14,704	5,100	1,061	21,008	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases		
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds	
104-94-9	p-Anisidine	97	1	0	0	0	0	0	0	0	0
		96	1	0	0	0	0	0	0	0	0
		95	2	5	0	0	0	5	0	0	5
		88	2	10	250	0	250	510	0	0	510
120-12-7	Anthracene	97	69	94,661	311	0	6,186	101,158	108,190	209,348	
		96	66	64,200	122	0	661	64,983	51,041	116,024	
		95	70	81,471	4,943	0	939	87,353	48,140	135,493	
		88	139	199,823	4,382	0	10,905	215,110	204,665	419,775	
7440-36-0	Antimony	97	126	6,628	14,415	0	27,112	48,155	279,569	327,724	
		96	136	12,128	6,308	0	9,480	27,916	380,867	408,783	
		95	135	34,418	6,592	0	18,786	59,796	122,672	182,468	
		88	152	69,916	11,114	2,100	903,916	987,046	625,682	1,612,728	
--	Antimony compounds	97	548	87,141	27,293	12,212	1,220,089	1,346,735	4,152,534	5,499,269	
		96	555	102,132	35,586	13,908	2,019,482	2,171,108	4,469,023	6,640,131	
		95	554	104,662	33,902	11,332	1,600,694	1,750,590	3,403,528	5,154,118	
		88	271	165,790	31,178	9,200	1,935,018	2,141,186	2,280,580	4,421,766	
7440-38-2	Arsenic	97	52	51,559	679	0	10,286	62,524	530,960	593,484	
		96	90	39,463	533	0	98,758	138,754	140,157	278,911	
		95	92	6,852	363	0	27,351	34,566	80,802	115,368	
		88	78	7,687	1,282	0	181,267	190,236	65,342	255,578	
--	Arsenic compounds	97	339	148,359	3,454	76,170	5,755,966	5,983,949	1,369,579	7,353,528	
		96	307	67,985	4,160	61,280	1,930,669	2,064,094	1,315,929	3,380,023	
		95	304	83,495	5,048	55,000	1,723,347	1,866,890	1,554,209	3,421,099	
		88	274	268,528	6,243	27,400	4,946,184	5,248,355	1,407,110	6,655,465	
1332-21-4 *	Asbestos (friable)	97	63	7,255	2	0	514,500	521,757	4,329,603	4,851,360	
		96	72	5,260	2	0	466,509	471,771	4,154,312	4,626,083	
		95	74	5,950	1	0	131,404	137,355	4,860,165	4,997,520	
		88	146	48,496	10,699	0	2,111,880	2,171,075	12,135,707	14,306,782	
1912-24-9 *	Atrazine	97	20	35,119	2,242	418	388,928	426,707	166,947	593,654	
		96	20	27,011	1,326	1	614,353	642,691	188,963	831,654	
		95	20	22,689	1,656	0	637,036	661,381	101,631	763,012	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
7440-39-3	Barium	97	73	120,075	25,436	0	504,289	649,800	874,975	1,524,775	
		96	65	43,629	2,482	0	318,932	365,043	741,151	1,106,194	
		95	74	91,666	6,279	0	227,523	325,468	395,999	721,467	
		88	142	266,811	18,650	0	6,721,686	7,007,147	1,883,903	8,891,050	

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
104-94-9	p-Anisidine	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	9	9	18	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
120-12-7	Anthracene	97	229,292	7,563	380,721	106,516	294,868	2,989	210,086	1,232,035	1,938
		96	187,266	7,620	112,111	210,016	1,255,761	11,085	104,794	1,888,653	2,319
		95	176,705	20,744	183,121	200,541	1,693,357	5,084	115,722	2,395,274	34,350
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7440-36-0	Antimony	97	3,873,483	876,978	25,969	49,316	328,072	28,355	320,843	5,503,016	6,339
		96	4,019,028	2,972,838	109,302	35,785	1,218,518	48,827	341,949	8,746,247	15,850
		95	3,831,021	5,603,552	0	1,730	818,680	95,894	126,888	10,477,765	459
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Antimony compounds	97	5,026,069	3,914,498	3,300	11,028	938,412	605,157	4,386,271	14,884,735	11,987
		96	6,201,653	2,801,839	0	56,679	99,918	880,027	5,326,629	15,366,745	442,143
		95	5,373,181	3,310,607	0	50,997	79,188	939,944	4,027,446	13,781,363	27,805
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7440-38-2	Arsenic	97	1,546,013	433,597	0	0	69,967	10,075	113,610	2,173,262	15,011
		96	1,191,541	751,272	0	0	70,004	22,108	243,304	2,278,229	8,567
		95	1,072,279	189,886	7,700	496	13,030	45,969	65,627	1,394,987	749
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Arsenic compounds	97	3,806,840	812,279	0	355	69,323	1,103,163	5,048,300	10,840,260	1,870,274
		96	3,495,192	365,704	0	177	92,028	1,445,156	2,886,607	8,284,864	189,784
		95	2,445,203	294,539	0	231	227,628	1,302,052	2,883,367	7,153,020	93,383
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1332-21-4 *	Asbestos (friable)	97	195,118	0	0	0	667,313	709,910	5,382,618	6,954,959	273,483
		96	142,589	0	0	0	519,822	260,418	4,253,024	5,175,853	196,000
		95	398,800	0	0	0	1,548,870	1,102	4,280,979	6,229,751	176,195
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1912-24-9 *	Atrazine	97	250	0	0	0	342,091	126,897	806,780	1,276,018	250
		96	59	0	0	0	365,171	148,665	827,033	1,340,928	0
		95	73	0	0	0	556,057	180,643	685,144	1,421,917	17,000
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7440-39-3	Barium	97	47,730	123,254	593,764	117,119	479,717	10,998	1,404,223	2,776,805	0
		96	58,305	115,456	220,321	3,263	75,212	65,880	991,448	1,529,885	650
		95	14,719	197,493	0	102	43,195	37,552	592,939	886,000	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	
--	Barium compounds	97	645	458,369	940,587	152,000	9,191,807	10,742,763	9,680,554	20,423,317
		96	563	318,425	99,487	0	1,983,887	2,401,799	5,720,310	8,122,109
		95	571	179,117	64,367	0	1,369,522	1,613,006	5,946,842	7,559,848
		88	628	1,027,222	104,302	2,773	5,791,655	6,925,952	17,531,268	24,457,220
22781-23-3 *	Bendiocarb	97	3	0	0	0	0	0	0	0
		96	1	0	0	0	0	0	0	0
		95	2	555	0	0	0	555	0	555
		88	NR	NR	NR	NR	NR	NR	NR	NR
1861-40-1 *	Benfluralin	97	4	1,960	0	0	0	1,960	8,400	10,360
		96	7	3,408	0	0	0	3,408	0	3,408
		95	8	2,977	0	0	0	2,977	14,000	16,977
		88	NR	NR	NR	NR	NR	NR	NR	NR
17804-35-2 *	Benomyl	97	3	0	0	0	0	0	0	0
		96	2	0	0	0	0	0	0	0
		95	2	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
98-87-3	Benzal chloride	97	3	1,030	1,500	0	0	2,530	0	2,530
		96	4	1,166	0	0	0	1,166	0	1,166
		95	4	1,112	0	0	0	1,112	0	1,112
		88	3	5,258	0	0	0	5,258	7,308	12,566
55-21-0	Benzamide	97	No reports received							
		96	No reports received							
		95	No reports received							
		88	1	500	250	250	0	1,000	750	1,750
71-43-2 *	Benzene	97	467	8,753,200	11,464	363,100	62,475	9,190,239	83,518	9,273,757
		96	479	8,285,151	27,364	312,766	51,179	8,676,460	66,246	8,742,706
		95	472	9,411,612	21,290	282,642	18,583	9,734,127	71,391	9,805,518
		88	483	32,341,184	46,732	825,035	126,978	33,339,929	396,880	33,736,809
98-07-7	Benzoic trichloride	97	7	6,067	0	0	0	6,067	520	6,587
		96	7	7,991	16	0	0	8,007	0	8,007
		95	7	6,496	0	0	0	6,496	250	6,746
		88	4	24,963	0	0	0	24,963	9,777	34,740
98-88-4	Benzoyl chloride	97	22	17,911	5	0	0	17,916	1,000	18,916
		96	22	18,703	0	0	0	18,703	2,370	21,073
		95	22	16,749	0	0	0	16,749	1,460	18,209
		88	22	33,014	0	130,000	250	163,264	2,399	165,663

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



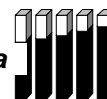


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
--	Barium compounds	97	30,421,974	1,998,629	142,000	216,995	7,507,910	1,763,375	14,260,037	56,310,920	2,240,371
		96	37,282,801	2,571,982	200	230,479	6,891,884	1,620,860	6,832,615	55,430,821	122,512
		95	26,551,729	1,847,515	200	70,062	6,364,467	3,489,203	6,712,309	45,035,485	33,032
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
22781-23-3 *	Bendiocarb	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	560	0	0	0	0	0	560	1,120	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1861-40-1 *	Benfluralin	97	72,000	0	0	0	1,700	55	10,500	84,255	0
		96	74,000	0	0	0	2,500	38,965	2,788	118,253	96
		95	4,205	0	0	0	6,200	175	16,910	27,490	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
17804-35-2 *	Benomyl	97	0	0	0	0	374,000	4,002	0	378,002	0
		96	0	0	0	0	340,000	6,000	0	346,000	0
		95	0	0	0	0	482,000	122,000	0	604,000	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
98-87-3	Benzal chloride	97	0	0	0	130,000	51,100	1,100	2,461	184,661	0
		96	0	0	0	780,000	110,000	180	1,168	891,348	0
		95	0	0	0	260,000	2,800	0	1,105	263,905	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
55-21-0	Benzamide	97	No reports received								
		96	No reports received								
		95	No reports received								
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
71-43-2 *	Benzene	97	46,015,599	381,821	60,211,346	1,146,425	47,653,556	2,274,444	9,202,991	166,886,182	62,271
		96	61,731,243	532,734	15,645,404	2,213,297	64,069,916	2,379,191	8,824,104	155,395,889	158,849
		95	49,501,392	420,034	20,222,877	1,579,955	54,035,116	1,974,430	9,795,408	137,529,212	65,951
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
98-07-7	Benzoic trichloride	97	0	0	0	22,000	210,000	0	6,596	238,596	0
		96	0	0	0	12,000	150,000	44	7,981	170,025	0
		95	0	0	0	3,001	150,000	32	6,242	159,275	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
98-88-4	Benzoyl chloride	97	0	0	0	0	1,974,302	365,304	18,706	2,358,312	111
		96	0	0	0	138	1,998,467	630,473	21,064	2,650,142	0
		95	0	0	0	80	1,676,545	615,127	18,213	2,309,965	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
94-36-0 *	Benzoyl peroxide	97	58	1,590	250	0	1,186	3,026	5,794	8,820
		96	62	2,019	260	0	1,655	3,934	6,352	10,286
		95	64	2,043	255	0	10,345	12,643	4,760	17,403
		88	50	6,294	0	5,350	36,050	47,694	23,954	71,648
100-44-7	Benzyl chloride	97	45	27,407	2,706	570	24	30,707	5,924	36,631
		96	45	19,442	324	660	173	20,599	4,824	25,423
		95	47	19,664	40	0	247	19,951	3,870	23,821
		88	51	43,329	640	0	500	44,469	9,687	54,156
7440-41-7	Beryllium	97	13	816	27	0	56,123	56,966	5,741	62,707
		96	9	859	31	0	31,240	32,130	4,842	36,972
		95	9	832	26	0	21,250	22,108	7,340	29,448
		88	12	2,763	74	0	37,000	39,837	3,160	42,997
--	Beryllium compounds	97	7	365	1	0	390	756	4,602	5,358
		96	8	395	1	0	16,188	16,584	2,333	18,917
		95	7	360	2	0	23,000	23,362	2,391	25,753
		88	5	862	17	0	12,000	12,879	8,261	21,140
82657-04-3 *	Bifenthrin	97	4	6	0	0	0	6	0	6
		96	3	7	0	0	0	7	0	7
		95	3	10	0	0	5	15	0	15
		88	NR	NR	NR	NR	NR	NR	NR	NR
92-52-4 *	Biphenyl	97	132	595,892	2,771	31,699	4,704	635,066	48,529	683,595
		96	137	659,117	9,779	31,558	29,272	729,726	37,462	767,188
		95	135	744,535	6,242	30,337	71,864	852,978	38,088	891,066
		88	181	1,211,292	88,197	82,760	222,297	1,604,546	227,492	1,832,038
111-91-1	Bis(2-chloroethoxy) methane	97	1	1,702	0	4,015	1,400	7,117	0	7,117
		96	1	1,331	0	6,688	542	8,561	0	8,561
		95	1	12,510	0	250	0	12,760	0	12,760
		88	NR	NR	NR	NR	NR	NR	NR	NR
111-44-4 *	Bis(2-chloroethyl) ether	97	13	1,515	5	0	0	1,520	0	1,520
		96	13	3,008	6	0	0	3,014	16	3,030
		95	11	564	3	0	0	567	0	567
		88	8	4,922	1,351	0	0	6,273	0	6,273
542-88-1	Bis(chloromethyl) ether	97	2	7	0	0	0	7	0	7
		96	3	0	0	0	0	0	0	0
		95	2	0	0	0	0	0	0	0
		88	2	1	0	0	0	1	0	1

Note: On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
94-36-0 *	Benzoyl peroxide	97	22,502	0	0	1	62,392	42,704	8,677	136,276	0
		96	11,580	8,300	0	3,527	43,700	47,483	10,026	124,616	0
		95	4,600	10,800	863	1,520	57,214	42,461	16,769	134,227	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
100-44-7	Benzyl chloride	97	17,000	0	21,472	455,495	277,157	23,534	35,866	830,524	0
		96	19,000	0	20,645	558,986	258,366	3,129	22,894	883,020	500
		95	1,000	0	25,481	430,300	256,947	10,947	21,501	746,176	80
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7440-41-7	Beryllium	97	110,428	120,381	0	0	0	14	61,323	292,146	0
		96	38,389	92,980	0	0	921	57	34,378	166,725	0
		95	39,689	11,363	0	0	780	423	27,079	79,334	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Beryllium compounds	97	0	38,600	0	0	0	1,643	4,197	44,440	0
		96	0	18,300	0	0	0	1,072	17,594	36,966	0
		95	7	23,880	0	0	0	1,011	24,661	49,559	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
82657-04-3 *	Bifenthrin	97	0	0	0	0	0	46	6	52	0
		96	0	0	0	0	0	48	7	55	0
		95	0	0	0	0	0	10	10	20	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
92-52-4 *	Biphenyl	97	290,759	302,713	1,573,135	143,730	4,050,685	834,719	696,431	7,892,172	5,291
		96	161,010	547,472	1,094,809	248,303	3,058,232	921,835	785,791	6,817,452	10,041
		95	268,053	156,081	1,088,381	346,055	963,993	600,999	904,287	4,327,849	11,635
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
111-91-1	Bis(2-chloroethoxy) methane	97	0	0	0	0	0	0	6,887	6,887	0
		96	0	0	0	0	0	0	8,561	8,561	0
		95	0	0	0	0	0	0	12,796	12,796	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
111-44-4 *	Bis(2-chloroethyl) ether	97	0	185,170	468,431	91,738	430,386	243,182	1,061	1,419,968	0
		96	0	180,000	573,000	407,636	960,300	37,079	2,902	2,160,917	0
		95	0	146,118	302,700	203,775	0	88,893	570	742,056	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
542-88-1	Bis(chloromethyl) ether	97	0	0	0	0	6,500	0	7	6,507	0
		96	0	0	0	0	6,500	0	0	6,500	0
		95	0	0	0	0	13,000	0	0	13,000	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

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Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	On-site Releases						Off-site Releases		Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
108-60-1	Bis(2-chloro-1-methylethyl) ether	97	2	3,860	0	0	3	3,863	0	3,863	
		96	2	4,620	44	0	3	4,667	0	4,667	
		95	2	6,130	0	0	0	6,130	0	6,130	
		88	2	7,959	30,000	0	0	37,959	0	37,959	
56-35-9 *	Bis(tributyltin) oxide	97	2	0	7	0	50	57	2,280	2,337	
		96	2	0	16	0	55	71	4,537	4,608	
		95	2	0	32	0	0	32	13,873	13,905	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
10294-34-5	Boron trichloride	97	7	754	0	0	0	754	0	754	
		96	6	37	0	0	0	37	0	37	
		95	4	5	0	0	0	5	0	5	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
7637-07-2	Boron trifluoride	97	25	21,290	0	0	0	21,290	5	21,295	
		96	25	22,555	0	0	0	22,555	0	22,555	
		95	23	18,569	0	0	0	18,569	929	19,498	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
314-40-9 *	Bromacil	97	3	10	3,284	0	0	3,294	0	3,294	
		96	2	6	30,740	0	0	30,746	0	30,746	
		95	5	500	27,897	0	0	28,397	0	28,397	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
7726-95-6 *	Bromine	97	48	107,808	15	7	545	108,375	433,404	541,779	
		96	46	77,702	10	7	245,683	323,402	245,117	568,519	
		95	43	104,825	880	7	10	105,722	259,882	365,604	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
35691-65-7 *	1-Bromo-1-(bromomethyl)-1,3-propane-dicarbonitrile	97	2	0	0	0	0	0	0	0	
		96	2	0	0	0	0	0	0	0	
		95	1	0	0	0	0	0	0	0	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
353-59-3	Bromochlorodi--fluoromethane (Halon 1211)	97	3	2,042	0	0	0	2,042	0	2,042	
		96	3	4,688	0	0	0	4,688	0	4,688	
		95	4	4,811	0	0	0	4,811	0	4,811	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
75-25-2	Bromoform	97	No reports received								
		96	No reports received								
		95	No reports received								
		88	2	0	8,600	0	0	8,600	0	8,600	

Note: On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

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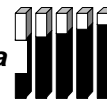


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
108-60-1	Bis(2-chloro-1-methylethyl) ether	97	13,000,000	0	0	0	11,685,200	0	3,900	24,689,100	1
		96	13,000,000	0	0	0	8,934,000	0	4,700	21,938,700	1
		95	5,200,000	0	8,540,000	0	10,840,000	0	6,100	24,586,100	1
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
56-35-9 *	Bis(tributyltin) oxide	97	0	36,426	0	0	167	180	2,337	39,110	0
		96	0	55,471	0	0	339	0	4,608	60,418	0
		95	0	39,840	0	0	336	0	13,903	54,079	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
10294-34-5	Boron trichloride	97	7,000	0	0	0	59,600	0	318	66,918	0
		96	6,000	0	0	0	6,500	0	37	12,537	0
		95	5,000	0	0	0	200	0	1	5,201	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7637-07-2	Boron trifluoride	97	0	0	0	0	497,548	152	21,343	519,043	280
		96	11	0	0	0	382,165	974	22,811	405,961	71
		95	0	0	0	0	425,701	1,027	17,919	444,647	4
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
314-40-9 *	Bromacil	97	0	0	0	0	16,912	19,881	3,313	40,106	0
		96	0	0	0	0	18,062	29,048	30,746	77,856	0
		95	5	0	0	0	30,687	27,829	27,947	86,468	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7726-95-6 *	Bromine	97	5,438,500	0	0	0	16,973,278	3,199,452	545,537	26,156,767	293
		96	4,662,000	0	0	0	14,057,885	2,831,509	326,754	21,878,148	804
		95	4,960,000	0	0	0	14,808,669	2,924,242	104,745	22,797,656	28
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
35691-65-7 *	1-Bromo-1-(bromomethyl)-1,3-propanedicarbonitrile	97	0	0	0	0	12,000	7,871	0	19,871	0
		96	0	0	0	0	29,000	7,104	0	36,104	0
		95	0	0	0	0	0	10,957	0	10,957	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
353-59-3	Bromochlorodifluoromethane (Halon 1211)	97	554,000	0	0	0	0	0	2,053	556,053	0
		96	674,672	0	0	0	0	0	4,699	679,371	0
		95	282,800	0	0	0	0	0	4,832	287,632	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-25-2	Bromoform	97	No reports received								
		96	No reports received								
		95	No reports received								
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	
74-83-9 *	Bromomethane	97	47	1,876,553	14	244	6	1,876,817	0	1,876,817
		96	51	2,299,843	7	303	6	2,300,159	0	2,300,159
		95	42	2,601,734	14	3,817	0	2,605,565	0	2,605,565
		88	36	2,784,795	0	1,546	0	2,786,341	0	2,786,341
75-63-8	Bromotrifluoro- methane (Halon 1301)	97	6	27,405	0	0	0	27,405	0	27,405
		96	6	26,153	0	0	0	26,153	0	26,153
		95	8	33,632	0	0	0	33,632	0	33,632
		88	NR	NR	NR	NR	NR	NR	NR	NR
1689-84-5 *	Bromoxynil	97	2	506	0	0	0	506	2,842	3,348
		96	2	15	0	0	0	15	1,388	1,403
		95	1	6	0	0	0	6	990	996
		88	NR	NR	NR	NR	NR	NR	NR	NR
1689-99-2 *	Bromoxynil octanoate	97	5	1,386	0	0	0	1,386	17,990	19,376
		96	5	521	0	0	0	521	16,605	17,126
		95	4	500	0	0	0	500	13,569	14,069
		88	NR	NR	NR	NR	NR	NR	NR	NR
357-57-3	Brucine	97	1	0	0	0	0	0	0	0
		96	1	0	0	0	0	0	0	0
		95	1	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
106-99-0	1,3-Butadiene	97	186	2,710,735	2,552	1,000	294	2,714,581	6,600	2,721,181
		96	185	2,768,958	11,001	1,000	263	2,781,222	4,790	2,786,012
		95	185	3,048,679	5,393	0	277	3,054,349	4,892	3,059,241
		88	157	7,004,622	522,504	1,500	7,817	7,536,443	185,398	7,721,841
141-32-2	Butyl acrylate	97	158	232,375	7,242	0	805	240,422	21,150	261,572
		96	158	214,338	712	0	2,165	217,215	50,540	267,755
		95	164	228,768	2,919	0	559	232,246	73,301	305,547
		88	166	411,862	3,528	0	602	415,992	18,766	434,758
71-36-3	n-Butyl alcohol	97	1,001	21,456,156	79,743	3,122,078	34,484	24,692,461	188,914	24,881,375
		96	1,050	23,056,451	61,936	2,452,006	5,134	25,575,527	304,582	25,880,109
		95	1,113	25,717,020	115,353	2,263,357	4,631	28,100,361	286,766	28,387,127
		88	1,109	37,715,221	128,130	3,006,660	175,819	41,025,830	924,519	41,950,349
78-92-2 *	sec-Butyl alcohol	97	120	959,349	11,965	152,939	10	1,124,263	17,496	1,141,759
		96	114	1,251,680	6,920	120,169	490	1,379,259	18,769	1,398,028
		95	113	898,282	6,782	136,172	2,805	1,044,041	18,376	1,062,417
		88	92	1,097,163	122,291	0	2,600	1,222,054	21,351	1,243,405

**Note: On-site Releases** from Section 5 of Form R. **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R. **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
74-83-9 *	Bromomethane	97	23,310	0	273,200	280	967,441	0	1,856,305	3,120,536	13,155
		96	39,200	0	207,750	190	454,397	0	2,300,248	3,001,785	33,425
		95	165,182	0	101,000	380	4,876,073	0	2,578,001	7,720,636	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-63-8	Bromotrifluoromethane (Halon 1301)	97	410,000	0	0	0	0	0	27,410	437,410	316
		96	343,951	0	0	0	0	0	23,753	367,704	2,327
		95	200,661	0	0	0	0	0	36,155	236,816	805
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1689-84-5 *	Bromoxynil	97	0	0	0	0	0	50	2,611	2,661	0
		96	0	0	0	0	0	203	1,343	1,546	0
		95	0	0	0	0	0	0	996	996	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1689-99-2 *	Bromoxynil octanoate	97	0	0	0	0	0	167	19,596	19,763	0
		96	0	0	0	0	0	1,448	16,726	18,174	0
		95	0	0	0	0	0	173	13,689	13,862	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
357-57-3	Brucine	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
106-99-0	1,3-Butadiene	97	5,481,906	14,451,023	40,873,920	57,787	65,299,067	314,610	2,210,086	128,688,399	510,546
		96	5,953,022	13,046,362	37,128,076	3,110	61,908,326	92,416	2,715,118	120,846,430	70,362
		95	5,513,939	13,652,736	32,353,920	34,519	57,784,775	96,310	2,877,550	112,313,749	200,544
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
141-32-2	Butyl acrylate	97	110,060	165,089	9,499,188	608,286	3,403,674	91,101	258,068	14,135,466	130
		96	93,695	88,006	1,902,440	308,234	3,155,076	170,631	261,820	5,979,902	24,791
		95	173,995	207,325	4,059,201	1,143,139	4,173,410	228,382	299,618	10,285,070	5,264
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
71-36-3	n-Butyl alcohol	97	10,377,274	3,504,078	28,650,346	7,777,463	35,473,237	4,283,777	24,850,956	114,917,131	28,564
		96	7,350,311	3,125,656	22,248,666	7,926,692	39,455,766	3,146,458	25,802,321	109,055,870	3,630
		95	8,438,943	3,351,225	24,665,663	8,569,241	37,970,936	3,346,704	28,455,353	114,798,065	52,280
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
78-92-2 *	sec-Butyl alcohol	97	138,499	36,291	13,475,118	1,981,948	2,115,036	51,775	1,121,428	18,920,095	57
		96	472,175	30,095	20,272,772	3,492,855	2,060,170	115,295	1,175,115	27,618,477	527
		95	748,440	24,774	13,041,102	6,275,927	2,249,797	99,596	1,079,508	23,519,144	2,800
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases		Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
75-65-0 *	tert-Butyl alcohol	97	86	577,415	29,477	980,424	751	1,588,067	279,582	1,867,649	
		96	92	767,202	30,430	1,007,213	758	1,805,603	54,158	1,859,761	
		95	91	657,818	20,183	1,082,071	751	1,760,823	30,783	1,791,606	
		88	54	1,574,137	14,989	674,798	818	2,264,742	56,502	2,321,244	
106-88-7	1,2-Butylene oxide	97	13	16,001	70	0	0	16,071	12	16,083	
		96	13	12,697	45	0	0	12,742	12	12,754	
		95	15	11,083	1	0	0	11,084	5	11,089	
		88	18	99,931	3,500	0	250	103,681	898	104,579	
123-72-8 *	Butyraldehyde	97	33	346,922	362	29,000	1	376,285	233	376,518	
		96	30	283,630	441	43,344	46	327,461	37	327,498	
		95	28	291,440	821	149,783	10	442,054	41	442,095	
		88	26	2,218,692	3,812	1,997	31	2,224,532	117,741	2,342,273	
7440-43-9	Cadmium	97	53	2,376	521	0	8,604	11,501	135,195	146,696	
		96	55	4,786	1,010	0	47,930	53,726	78,102	131,828	
		95	47	11,941	458	0	19,856	32,255	90,264	122,519	
		88	90	22,430	2,598	0	94,602	119,630	155,313	274,943	
--	Cadmium compounds	97	95	64,212	1,934	52	988,095	1,054,293	1,350,236	2,404,529	
		96	95	55,440	3,740	82	697,790	757,052	1,042,566	1,799,618	
		95	116	53,283	880	109	537,776	592,048	1,734,196	2,326,244	
		88	116	118,728	1,549	2,409	294,877	417,563	1,066,648	1,484,211	
156-62-7 *	Calcium cyanamide	97	4	105	0	0	0	105	0	105	
		96	3	2	0	0	0	2	0	2	
		95	5	10	0	0	0	10	0	10	
		88	3	12,600	0	0	66,000	78,600	0	78,600	
133-06-2 *	Captan	97	12	6,316	5	5	0	6,326	391	6,717	
		96	16	12,625	5	5	0	12,635	2,196	14,831	
		95	15	7,280	5	0	5	7,290	3,868	11,158	
		88	18	14,869	750	5,100	1,000	21,719	12,434	34,153	
63-25-2 *	Carbaryl	97	18	17,776	12	0	7,568	25,356	16,634	41,990	
		96	21	13,432	54	0	2,935	16,421	3,098	19,519	
		95	21	7,824	10	0	1,060	8,894	26,861	35,755	
		88	23	7,923	877	0	500	9,300	6,198	15,498	
1563-66-2 *	Carbofuran	97	4	8,728	1	0	0	8,729	42	8,771	
		96	6	2,589	1	0	0	2,590	0	2,590	
		95	7	4,187	3,000	0	250	7,437	250	7,687	
		88	NR	NR	NR	NR	NR	NR	NR	NR	

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



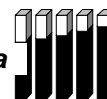


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
75-65-0 *	tert-Butyl alcohol	97	274,074	214,894	49,091,300	11,272,389	2,585,298	1,779,964	1,973,750	67,191,669	8,042
		96	437,181	14,684	53,474,091	9,096,077	2,117,278	1,310,991	2,259,440	68,709,742	102
		95	466,023	2,256	64,310,733	27,469,833	2,447,778	1,794,551	2,230,055	98,721,229	2,073
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
106-88-7	1,2-Butylene oxide	97	0	0	0	310,195	348,570	264	15,895	674,924	0
		96	0	0	46,792	260,307	350,376	20,524	12,770	690,769	0
		95	0	990	0	330,194	329,270	93	10,804	671,351	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
123-72-8 *	Butyraldehyde	97	0	1,200	2,864,034	224,224	2,102,870	297,449	376,908	5,866,685	1
		96	0	16,195	2,757,675	26,850	1,905,739	299,503	327,379	5,333,341	210
		95	0	1,300	2,545,861	22,000	1,982,004	169,714	440,778	5,161,657	7
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7440-43-9	Cadmium	97	1,090,072	310,225	0	0	33,925	10,497	128,622	1,573,341	0
		96	504,123	398,532	0	0	67,708	19,511	112,167	1,102,041	0
		95	1,471,697	538,690	29,191	633	91,725	53,384	74,015	2,259,335	3,911
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Cadmium compounds	97	7,937,874	1,255,346	0	1,501	6,647,787	44,755	2,233,696	18,120,959	66,080
		96	7,832,833	798,133	0	1,613	68,806	65,732	1,672,270	10,439,387	6,322
		95	8,221,108	1,416,852	0	1,082	86,561	141,412	2,202,701	12,069,716	11,697
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
156-62-7 *	Calcium cyanamide	97	0	8,365	0	0	0	0	101	8,466	0
		96	0	0	0	0	0	0	1	1	0
		95	0	0	0	0	0	0	6	6	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
133-06-2 *	Captan	97	3,580	0	0	0	9,700	540	6,099	19,919	0
		96	4,644	0	0	0	9,500	1,119	14,046	29,309	0
		95	5,070	0	0	0	9,834	1,072	7,479	23,455	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
63-25-2 *	Carbaryl	97	63,043	0	77,740	630	669,175	29,709	13,029	853,326	15,493
		96	46,896	0	458,932	0	437,614	28,463	13,765	985,670	0
		95	36,618	0	0	0	467,593	7,885	32,697	544,793	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1563-66-2 *	Carbofuran	97	0	0	0	0	3	29,338	8,728	38,069	0
		96	0	0	0	0	3	59,343	2,877	62,223	0
		95	0	0	0	1	3	47,158	8,222	55,384	1
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
75-15-0 *	Carbon disulfide	97	92	50,984,954	28,651	517,565	5	51,531,175	32,503	51,563,678
		96	93	72,782,220	66,555	3,788	270	72,852,833	19,097	72,871,930
		95	90	84,120,530	39,864	3,985	265	84,164,644	2,949	84,167,593
		88	88	124,109,904	39,501	13,400	43,436	124,206,241	58,473	124,264,714
56-23-5 *	Carbon tetrachloride	97	65	357,499	315	32,958	135	390,907	18,947	409,854
		96	64	350,846	215	44,515	0	395,576	9,245	404,821
		95	70	394,176	717	53,966	0	448,859	7,735	456,594
		88	95	3,795,248	15,627	98,050	14,759	3,923,684	49,703	3,973,387
463-58-1	Carbonyl sulfide	97	77	21,081,227	0	0	0	21,081,227	0	21,081,227
		96	72	20,106,987	0	0	0	20,106,987	0	20,106,987
		95	63	17,807,907	0	0	0	17,807,907	0	17,807,907
		88	38	25,954,103	0	0	0	25,954,103	0	25,954,103
5234-68-4 *	Carboxin	97	3	7	0	0	0	7	142	149
		96	3	8	0	0	0	8	384	392
		95	3	8	0	0	0	8	428	436
		88	NR	NR	NR	NR	NR	NR	NR	NR
120-80-9	Catechol	97	135	6,673	22,660	0	1,830	31,163	337	31,500
		96	130	5,306	24,784	0	2,219	32,309	239	32,548
		95	126	3,457	24,747	0	3,729	31,933	563	32,496
		88	113	3,789	320,546	0	84,332	408,667	89,474	498,141
133-90-4 *	Chloramben	97	No reports received							
		96	No reports received							
		95	No reports received							
		88	1	1,418	250	0	0	1,668	1,159	2,827
57-74-9 *	Chlordane	97	No reports received							
		96	1	660	95	0	0	755	0	755
		95	1	823	22	0	0	845	0	845
		88	2	2,698	4	4,262	0	6,964	0	6,964
115-28-6	Chlorendic acid	97	2	49	0	0	0	49	0	49
		96	2	43	0	0	0	43	0	43
		95	1	6	0	0	0	6	0	6
		88	NR	NR	NR	NR	NR	NR	NR	NR
90982-32-4 *	Chlorimuron ethyl	97	2	8	0	0	0	8	0	8
		96	1	1	0	0	0	1	0	1
		95	1	1	0	0	0	1	0	1
		88	NR	NR	NR	NR	NR	NR	NR	NR

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
75-15-0 *	Carbon disulfide	97	24,187,118	442	10,044,054	385,297	27,944,668	271,540	50,848,980	113,682,099	29,778
		96	19,122,418	395	6,776,413	290,280	18,928,988	317,618	73,198,714	118,634,826	41,700
		95	20,874,450	18	5,775,132	368,509	16,592,458	366,465	84,737,695	128,714,727	154,890
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
56-23-5 *	Carbon tetrachloride	97	2,801,998	139,227	983,907	37,782	42,300,623	1,158,420	382,418	47,804,375	11,773
		96	2,073,632	128,701	1,050,017	31,331	41,761,616	1,592,636	391,944	47,029,877	13,782
		95	1,677,422	365,067	317,149	50,068	52,783,870	730,882	436,696	56,361,154	34,522
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
463-58-1	Carbonyl sulfide	97	0	0	2,286,198	0	16,734,387	25	21,206,950	40,227,560	0
		96	0	0	1,805,617	0	15,751,155	5,900	20,222,630	37,785,302	0
		95	0	0	1,508,252	0	14,242,854	16,000	18,652,262	34,419,368	1
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
5234-68-4 *	Carboxin	97	1,017	0	0	0	0	360	149	1,526	0
		96	2,604	0	0	0	0	392	392	3,388	0
		95	2,817	0	0	0	0	402	436	3,655	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
120-80-9	Catechol	97	0	10,813	10,008,900	96,059	4,046,473	61,960	35,836	14,260,041	660
		96	0	0	11,260,377	32,079	3,731,658	27,096	36,688	15,087,898	0
		95	0	0	7,329,290	94,995	1,481,057	54,221	68,220	9,027,783	2,772
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
133-90-4 *	Chloramben	97	No reports received								
		96	No reports received								
		95	No reports received								
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
57-74-9 *	Chlordane	97	No reports received								
		96	0	0	0	0	4,150	84	755	4,989	0
		95	0	0	0	0	5,150	95	845	6,090	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
115-28-6	Chlorendic acid	97	0	0	0	0	0	914	49	963	0
		96	0	0	0	0	0	553	43	596	0
		95	0	0	0	0	0	488	6	494	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
90982-32-4 *	Chlorimuron ethyl	97	0	0	0	0	0	16,223	8	16,231	0
		96	0	0	0	0	0	36,604	1	36,605	0
		95	0	0	0	0	0	5,838	1	5,839	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
7782-50-5 *	Chlorine	97	1,257	64,419,432	301,119	60,595	73,776	64,854,922	46,946	64,901,868
		96	1,323	66,404,743	466,475	74,196	372,788	67,318,202	21,045	67,339,247
		95	1,373	65,770,630	413,441	74,124	64,095	66,322,290	40,771	66,363,061
		88	1,800	133,085,601	6,622,187	107,624	439,547	140,254,959	1,003,531	141,258,490
10049-04-4 *	Chlorine dioxide	97	126	1,311,372	58	0	0	1,311,430	0	1,311,430
		96	125	1,210,625	0	0	0	1,210,625	0	1,210,625
		95	127	1,303,526	5	0	0	1,303,531	0	1,303,531
		88	122	12,251,050	2,350	0	41,000	12,294,400	41,750	12,336,150
79-11-8 *	Chloroacetic acid	97	30	6,125	8	0	19,746	25,879	500	26,379
		96	29	6,432	2	0	250	6,684	255	6,939
		95	30	6,474	11,121	0	0	17,595	600	18,195
		88	37	26,819	850	10	0	27,679	2,506	30,185
4080-31-3 *	1-(3-Chloroallyl)-3,5,7-triaza-1-azonia-adamantane chloride	97	14	549	21	0	672	1,242	4,804	6,046
		96	9	60	15	0	607	682	4,582	5,264
		95	7	93	10	0	521	624	2,514	3,138
		88	NR	NR	NR	NR	NR	NR	NR	NR
106-47-8 *	p-Chloroaniline	97	4	15,332	869	0	5	16,206	0	16,206
		96	3	144	407	0	5	556	0	556
		95	4	267	827	0	0	1,094	11	1,105
		88	NR	NR	NR	NR	NR	NR	NR	NR
108-90-7 *	Chlorobenzene	97	76	962,904	1,217	113,901	1,550	1,079,572	105,300	1,184,872
		96	76	1,230,686	2,086	68,701	5	1,301,478	106,844	1,408,322
		95	61	1,132,063	1,850	27,405	5	1,161,323	92,582	1,253,905
		88	66	4,375,887	98,354	84,457	4,127	4,562,825	117,624	4,680,449
75-68-3	1-Chloro-1,1-difluoroethane (HCFC-142b)	97	27	5,964,553	193	0	0	5,964,746	14,550	5,979,296
		96	28	6,406,031	2,858	0	0	6,408,889	14,450	6,423,339
		95	25	6,954,443	771	6	0	6,955,220	21,600	6,976,820
		88	NR	NR	NR	NR	NR	NR	NR	NR
75-45-6 *	Chlorodifluoromethane (HCFC-22)	97	231	8,929,443	3,650	0	1	8,933,094	73,609	9,006,703
		96	242	10,094,174	2,538	0	1	10,096,713	54,200	10,150,913
		95	241	12,550,871	2,279	22	1	12,553,173	55,084	12,608,257
		88	NR	NR	NR	NR	NR	NR	NR	NR
75-00-3	Chloroethane	97	57	2,532,822	905	0	0	2,533,727	5,128	2,538,855
		96	54	2,770,560	285	92	0	2,770,937	4,900	2,775,837
		95	54	2,764,049	2,320	0	116	2,766,485	4,400	2,770,885
		88	50	4,887,215	27,448	1,510	1	4,916,174	32,260	4,948,434

Note: On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

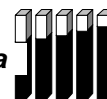


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
7782-50-5 *	Chlorine	97	79,099,777	111,317	0	2,161	229,962,293	1,106,905	64,957,305	375,239,758	40,564
		96	82,275,726	751,497	4,000	14,348	259,650,832	1,250,183	67,361,102	411,307,688	20,229
		95	84,997,609	1,791,968	499	1,585	220,212,624	1,179,749	66,341,058	374,525,092	13,336
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
10049-04-4 *	Chlorine dioxide	97	3,868,805	0	0	0	52,622,530	6,000	1,333,906	57,831,241	2,095
		96	2,242,600	0	0	0	51,143,368	16,000	1,357,715	54,759,683	10,499
		95	2,446,060	0	0	0	40,375,897	0	1,325,311	44,147,268	3,932
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
79-11-8 *	Chloroacetic acid	97	37,000	0	0	0	1,290,589	20,014	6,421	1,354,024	700
		96	42,416	0	0	0	1,636,910	124	6,756	1,686,206	550
		95	25,013	0	0	0	1,331,388	2,726	17,712	1,376,839	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
4080-31-3 *	1-(3-Chloroallyl)-3,5,7-triaza-1-azonia-adamantane chloride	97	31,708	0	0	0	2,404	15,666	7,105	56,883	0
		96	9,900	0	0	0	1,080	6,400	5,275	22,655	0
		95	2,700	0	0	0	720	4,700	3,570	11,690	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
106-47-8 *	p-Chloroaniline	97	0	0	46,000	400	0	5,815	16,898	69,113	0
		96	0	0	0	455	411	9,226	1,367	11,459	0
		95	0	0	0	540	0	120,301	940	121,781	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
108-90-7 *	Chlorobenzene	97	5,571,993	1,492,007	6,799,180	1,359,228	10,248,621	3,422,433	1,118,897	30,012,359	3,374
		96	5,742,719	1,613,818	2,870,143	607,803	11,519,200	2,860,128	1,363,084	26,576,895	6,589
		95	9,123,869	1,016,982	1,978,757	1,366,145	11,231,684	1,503,368	1,242,672	27,463,477	20,610
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-68-3	1-Chloro-1,1-difluoroethane (HCFC-142b)	97	0	25,169	0	5,000	272,446	97,136	5,986,413	6,386,164	30,300
		96	13,140	14,000	0	21	154,810	42,968	6,439,262	6,664,201	24,480
		95	52,560	0	0	320	304,070	26,330	6,933,797	7,317,077	459
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-45-6 *	Chlorodifluoromethane (HCFC-22)	97	1,787,283	201,044	0	250	469,293	324,199	8,930,366	11,712,435	155,681
		96	4,647,033	229,798	0	721	556,776	296,699	10,036,817	15,767,844	160,267
		95	2,374,126	242,086	0	27,002	401,771	258,992	12,445,343	15,749,320	190,653
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-00-3	Chloroethane	97	3,923,357	165,400	8,196,910	41,817	31,313,445	576,354	2,536,920	46,754,203	1,888
		96	3,909,753	154,153	12,244,253	39,686	28,988,635	496,976	2,771,665	48,605,121	15,434
		95	2,321,094	155,726	13,500,359	45,855	28,073,797	491,378	2,770,574	47,358,783	8,570
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
67-66-3 *	Chloroform	97	144	7,205,396	164,654	26,954	7,524	7,404,528	14,498	7,419,026
		96	158	9,353,768	341,066	45,387	7,735	9,747,956	38,868	9,786,824
		95	160	10,275,914	330,352	33,276	4,297	10,643,839	6,636	10,650,475
		88	169	25,988,609	1,114,965	36,000	68,647	27,208,221	143,124	27,351,345
74-87-3 *	Chloromethane	97	98	3,259,431	1,608	186,931	59	3,448,029	205	3,448,234
		96	102	4,467,830	803	99,705	80	4,568,418	392	4,568,810
		95	108	4,383,749	57,425	50,198	35	4,491,407	1,557	4,492,964
		88	81	11,567,647	115,985	165,250	0	11,848,882	59,140	11,908,022
107-30-2	Chloromethyl methyl ether	97	3	4,155	5	0	0	4,160	54	4,214
		96	3	2,841	7	0	0	2,848	70	2,918
		95	3	2,865	10	0	0	2,875	70	2,945
		88	4	3,033	0	0	0	3,033	0	3,033
563-47-3	3-Chloro-2-methyl-1-propene	97	3	25,982	0	0	0	25,982	0	25,982
		96	3	23,007	0	0	0	23,007	0	23,007
		95	3	19,859	0	0	0	19,859	0	19,859
		88	NR	NR	NR	NR	NR	NR	NR	NR
--	Chlorophenols	97	6	4,779	16	92,980	0	97,775	839	98,614
		96	6	4,775	13	113,554	0	118,342	2,290	120,632
		95	9	4,997	30	105,687	0	110,714	940	111,654
		88	9	2,573	272	71,554	0	74,399	2	74,401
76-06-2 *	Chloropicrin	97	16	10,147	0	0	0	10,147	10,700	20,847
		96	16	11,773	0	0	0	11,773	216	11,989
		95	15	11,229	0	0	0	11,229	36	11,265
		88	NR	NR	NR	NR	NR	NR	NR	NR
126-99-8	Chloroprene	97	11	996,060	0	94,000	0	1,090,060	0	1,090,060
		96	14	1,070,147	5	120,000	8,640	1,198,792	8,640	1,207,432
		95	14	983,888	0	60,000	5,104	1,048,992	7,102	1,056,094
		88	13	1,948,008	287	68,792	0	2,017,087	0	2,017,087
354-25-6	1-Chloro-1,1,2,2-tetrafluoroethane (HCFC-124a)	97	3	549,113	0	0	0	549,113	0	549,113
		96	7	596,466	65	0	0	596,531	0	596,531
		95	4	504,553	0	0	0	504,553	0	504,553
		88	NR	NR	NR	NR	NR	NR	NR	NR
2837-89-0	2-Chloro-1,1,1,2-tetra fluoroethane (HCFC-124)	97	20	865,860	5	0	0	865,865	0	865,865
		96	17	904,474	961	0	0	905,435	0	905,435
		95	11	752,215	1,255	0	0	753,470	0	753,470
		88	NR	NR	NR	NR	NR	NR	NR	NR

Note: On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
67-66-3 *	Chloroform	97	5,675,765	735,446	5,823,214	314,634	16,142,192	1,548,310	7,389,584	37,629,145	17,372
		96	6,039,162	677,733	8,887,218	188,162	13,454,140	2,486,020	9,647,575	41,380,010	48,414
		95	5,138,816	175,713	17,187,219	103,558	17,351,138	2,061,635	10,608,511	52,626,590	27,205
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
74-87-3 *	Chloromethane	97	3,181,750	4,750	3,252,115	8,489	6,038,027	318,569	3,357,148	16,160,848	25,468
		96	2,999,190	0	4,492,933	6,194	12,991,668	263,121	4,736,604	25,489,710	7,420
		95	2,803,788	650	4,421,896	4,505	14,313,676	240,406	4,482,520	26,267,441	7,916
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
107-30-2	Chloromethyl methyl ether	97	0	0	0	0	12,823	0	4,227	17,050	0
		96	0	0	0	0	8,220	0	2,917	11,137	0
		95	0	0	0	0	15,900	0	2,909	18,809	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
563-47-3	3-Chloro-2-methyl-1-propene	97	0	0	0	0	625,186	14,191	25,983	665,360	0
		96	0	0	0	0	345,271	52,312	23,007	420,590	0
		95	0	0	0	0	544,134	14,819	19,859	578,812	10
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Chlorophenols	97	2,897,377	0	0	100	237,504	5,540	97,871	3,238,392	749
		96	2,486,786	0	0	670	207,215	8,698	119,475	2,822,844	1,161
		95	2,919,075	0	0	6,400	237,484	26,212	109,847	3,299,018	1,776
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
76-06-2 *	Chloropicrin	97	2,210	0	0	0	343	1,469	20,781	24,803	14
		96	29,902	0	0	64	365	370	11,812	42,513	0
		95	9,981	0	0	54	441	34,387	10,434	55,297	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
126-99-8	Chloroprene	97	0	374,960	1,226,280	2,599	8,601,500	431,665	1,089,960	11,726,964	30
		96	0	280,127	944,336	14,010	7,250,217	268,995	1,198,785	9,956,470	50
		95	0	480,972	26,280	9,105	4,233,572	138,421	1,050,975	5,939,325	515
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
354-25-6	1-Chloro-1,1,2,2-tetrafluoroethane (HCFC-124a)	97	0	0	0	0	37,725	0	548,521	586,246	0
		96	0	0	0	0	33,195	0	596,019	629,214	312
		95	0	0	0	0	1,725	0	504,011	505,736	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
2837-89-0	2-Chloro-1,1,1,2-tetra fluoroethane (HCFC-124)	97	0	267,438	0	0	34,892	20,753	868,043	1,191,126	0
		96	184,882	226,700	0	0	183,025	39,799	904,800	1,539,206	618
		95	0	239,200	0	0	193,194	35,816	753,296	1,221,506	400
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
1897-45-6 *	Chlorothalonil	97	19	7,914	83	0	0	7,997	171,838	179,835
		96	25	9,346	22	0	1,670	11,038	253,395	264,433
		95	25	7,440	35	0	750	8,225	97,420	105,645
		88	10	28,476	250	0	0	28,726	396,274	425,000
75-88-7	2-Chloro-1,1,1-trifluoroethane (HCFC-133a)	97	4	23,310	60	0	0	23,370	80	23,450
		96	3	34,213	0	0	0	34,213	0	34,213
		95	2	35,523	0	0	0	35,523	0	35,523
		88	NR	NR	NR	NR	NR	NR	NR	NR
75-72-9	Chlorotrifluoromethane (CFC-13)	97	1	16,900	5	0	0	16,905	0	16,905
		96	1	9,350	250	0	0	9,600	0	9,600
		95	1	250	0	0	0	250	0	250
		88	NR	NR	NR	NR	NR	NR	NR	NR
5598-13-0 *	Chlorpyrifos methyl	97	4	1,000	0	0	0	1,000	0	1,000
		96	5	2,010	0	0	3,653	5,663	0	5,663
		95	4	510	0	0	6,000	6,510	0	6,510
		88	NR	NR	NR	NR	NR	NR	NR	NR
64902-72-3 *	Chlorsulfuron	97	1	1	0	0	0	1	0	1
		96	1	1	0	0	0	1	0	1
		95	1	1	0	0	0	1	0	1
		88	NR	NR	NR	NR	NR	NR	NR	NR
7440-47-3	Chromium	97	1,845	572,772	11,805	1	453,656	1,038,234	5,962,093	7,000,327
		96	1,861	445,080	574,396	7	761,711	1,781,194	5,676,360	7,457,554
		95	1,913	411,671	17,220	33	1,106,233	1,535,157	5,533,193	7,068,350
		88	1,250	566,202	75,192	2,249	9,282,766	9,926,409	11,693,176	21,619,585
--	Chromium compounds	97	1,460	387,028	99,497	1,131,559	29,326,433	30,944,517	19,465,080	50,409,597
		96	1,415	369,806	137,732	37,422	26,494,593	27,039,553	14,537,450	41,577,003
		95	1,439	643,539	137,235	60,747	22,180,960	23,022,481	19,971,318	42,993,799
		88	1,210	763,353	326,277	52,653	30,938,106	32,080,389	14,895,062	46,975,451
6459-94-5	C.I. Acid Red 114	97	2	0	0	0	0	0	0	0
		96	No reports received							
		95	1	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
569-64-2 *	C.I. Basic Green 4	97	3	15	0	0	0	15	750	765
		96	2	5	0	0	0	5	0	5
		95	2	5	0	0	0	5	0	5
		88	6	750	0	0	0	750	250	1,000

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



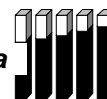


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
1897-45-6 *	Chlorothalonil	97	2,445	0	0	0	18,720	144,424	180,811	346,400	180
		96	2,016	148	0	0	25,902	272,955	264,168	565,189	2,469
		95	5,339	0	0	2,294	24,716	139,966	102,279	274,594	1
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-88-7	2-Chloro-1,1,1-trifluoroethane (HCFC-133a)	97	0	0	0	0	8,700	17,158	23,700	49,558	8
		96	0	0	0	0	0	16,571	34,298	50,869	0
		95	0	0	0	0	0	0	35,608	35,608	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-72-9	Chlorotrifluoromethane (CFC-13)	97	0	0	0	0	0	0	16,910	16,910	0
		96	0	0	0	0	0	0	9,500	9,500	0
		95	0	0	0	0	0	0	30	30	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
5598-13-0 *	Chlorpyrifos methyl	97	2,000	0	0	0	0	2,233	1,000	5,233	0
		96	2,692	0	0	0	0	8,775	6,502	17,969	0
		95	400	0	0	0	0	6,095	6,402	12,897	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
64902-72-3 *	Chlorsulfuron	97	0	0	0	0	0	7,173	1	7,174	0
		96	0	0	0	0	0	9,807	1	9,808	0
		95	0	0	0	0	0	3,444	1	3,445	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7440-47-3	Chromium	97	26,785,710	98,912,248	70,198	310	293,650	850,114	6,903,128	133,815,358	184,283
		96	30,630,739	90,071,592	34,195	1,254	316,631	1,347,530	6,956,459	129,358,400	12,182
		95	29,309,918	99,412,477	9,781,278	51,738	399,607	1,657,703	7,847,861	148,460,582	41,365
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Chromium compounds	97	30,112,660	33,983,201	74,023	61,643	1,391,548	5,461,721	43,054,737	114,139,533	1,155,182
		96	25,719,310	29,726,726	27,254	73,493	5,417,791	3,216,875	39,135,841	103,317,290	867,704
		95	36,626,812	40,398,253	44,280	68,741	94,214,040	3,527,891	38,849,665	213,729,682	1,658,100
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
6459-94-5	C.I. Acid Red 114	97	0	0	0	0	0	0	0	0	0
		96	No reports received								
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
569-64-2 *	C.I. Basic Green 4	97	0	0	0	0	0	998	20	1,018	0
		96	0	0	0	0	100	499	10	609	0
		95	0	0	0	0	110	499	10	619	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	Total On- and Off-site Releases Pounds	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
989-38-8	C.I. Basic Red 1	97	1	0	0	0	0	0	0	0	
		96	2	0	0	0	0	0	668	668	
		95	2	0	0	0	0	0	668	668	
		88	No reports received								
28407-37-6	C.I. Direct Blue 218	97	6	10	10	0	0	20	2,489	2,509	
		96	4	10	6	0	0	16	1,400	1,416	
		95	6	10	6	0	0	16	1,400	1,416	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
16071-86-6	C.I. Direct Brown 95	97	No reports received								
		96	No reports received								
		95	1	0	0	0	0	0	0	0	
		88	No reports received								
2832-40-8	C.I. Disperse Yellow 3	97	4	338	29	0	0	367	593	960	
		96	3	452	28	0	0	480	594	1,074	
		95	3	450	27	0	0	477	1,061	1,538	
		88	1	398	302	0	0	700	899	1,599	
81-88-9	C.I. Food Red 15	97	2	0	0	0	0	0	0	0	
		96	2	0	0	0	0	0	0	0	
		95	2	0	0	0	0	0	0	0	
		88	2	250	0	0	0	250	0	250	
97-56-3	C.I. Solvent Yellow 3	97	1	0	0	0	0	0	0	0	
		96	No reports received								
		95	1	0	0	0	0	0	0	0	
		88	1	250	0	0	0	250	0	250	
842-07-9	C.I. Solvent Yellow 14	97	No reports received								
		96	No reports received								
		95	No reports received								
		88	2	0	0	0	0	0	0	0	
7440-48-4	Cobalt	97	260	34,954	2,164	40	8,994	46,152	685,258	731,410	
		96	255	31,506	4,580	0	64,364	100,450	168,362	268,812	
		95	253	34,294	17,300	0	46,482	98,076	221,839	319,915	
		88	177	44,005	16,744	0	213,204	273,953	248,089	522,042	
--	Cobalt compounds	97	260	31,406	34,650	44,624	631,054	741,734	557,124	1,298,858	
		96	240	30,927	27,935	15,917	486,599	561,378	586,016	1,147,394	
		95	224	29,093	70,392	22,657	454,624	576,766	299,268	876,034	
		88	150	56,410	63,662	18,500	38,960	177,532	300,641	478,173	

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds	
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds				
989-38-8	C.I. Basic Red 1	97	0	0	0	0	0	0	0	0	0	
		96	0	0	0	40	0	263	668	971	0	
		95	0	0	0	54	0	289	668	1,011	0	
		88	No reports received									
28407-37-6	C.I. Direct Blue 218	97	2	0	0	0	374	1,531	3,688	5,595	0	
		96	0	0	0	0	639	74	4,442	5,155	0	
		95	5	0	0	0	619	5,151	1,411	7,186	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
16071-86-6	C.I. Direct Brown 95	97	No reports received									
		96	No reports received									
		95	0	0	0	0	0	0	0	0	0	
		88	No reports received									
2832-40-8	C.I. Disperse Yellow 3	97	0	0	0	0	0	3,664	960	4,624	0	
		96	0	0	0	0	0	5,886	1,074	6,960	0	
		95	0	0	0	0	1,061	5,189	1,410	7,660	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
81-88-9	C.I. Food Red 15	97	0	0	0	0	0	0	0	0	0	
		96	0	0	0	0	0	0	0	0	0	
		95	0	0	0	0	0	0	0	0	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
97-56-3	C.I. Solvent Yellow 3	97	0	0	0	0	0	0	0	0	0	
		96	No reports received									
		95	0	0	0	0	0	0	0	0	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
842-07-9	C.I. Solvent Yellow 14	97	No reports received									
		96	No reports received									
		95	No reports received									
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7440-48-4	Cobalt	97	4,423,572	7,919,086	0	0	147,031	24,592	277,126	12,791,407	3	
		96	3,782,710	7,031,616	0	0	147,007	52,132	307,041	11,320,506	0	
		95	3,577,817	11,784,639	0	1	379,265	85,327	232,604	16,059,653	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Cobalt compounds	97	503,731	1,972,586	0	6,773	1,209,764	57,859	1,304,459	5,055,172	1,404	
		96	215,762	1,959,664	0	6,675	1,107,761	92,924	1,107,388	4,490,174	130	
		95	222,882	1,573,341	0	6,087	1,394,877	86,932	816,222	4,100,341	4,230	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
7440-50-8 *	Copper	97	2,712	892,348	40,457	57,513	1,772,586	2,762,904	18,378,475	21,141,379
		96	2,720	5,037,484	49,771	41,032	3,338,006	8,466,293	13,493,129	21,959,422
		95	2,726	1,208,172	43,261	29,787	1,658,434	2,939,654	14,928,480	17,868,134
		88	1,970	1,525,311	115,641	15,651	10,466,175	12,122,778	17,288,955	29,411,733
--	Copper compounds	97	1,488	5,488,173	105,892	237,184	38,168,231	43,999,480	10,770,350	54,769,830
		96	1,436	1,095,598	75,768	298,693	47,636,870	49,106,929	8,503,303	57,610,232
		95	1,420	2,019,686	85,774	264,852	40,760,958	43,131,270	9,071,879	52,203,149
		88	1,042	3,157,209	185,292	165,957	29,683,607	33,192,065	14,132,348	47,324,413
8001-58-9 *	Creosote	97	77	1,288,999	8,452	0	27,930	1,325,381	2,301,965	3,627,346
		96	80	924,873	9,120	0	710	934,703	7,333,126	8,267,829
		95	85	928,376	8,427	0	500	937,303	2,595,570	3,532,873
		88	NR	NR	NR	NR	NR	NR	NR	NR
120-71-8	p-Cresidine	97	4	3,027	0	0	0	3,027	2,100	5,127
		96	5	3,465	0	0	0	3,465	0	3,465
		95	5	4,606	0	0	0	4,606	2,200	6,806
		88	6	7,080	250	0	750	8,080	4,700	12,780
108-39-4 *	m-Cresol	97	24	54,374	139	430,000	0	484,513	2,694	487,207
		96	27	41,224	1,633	520,000	0	562,857	1,473	564,330
		95	29	48,000	1,675	680,000	0	729,675	3,218	732,893
		88	15	18,432	283	0	455	19,170	13,503	32,673
95-48-7	o-Cresol	97	24	10,091	40	260,000	0	270,131	16,440	286,571
		96	19	8,291	845	440,000	0	449,136	4,257	453,393
		95	23	12,425	82	590,000	0	602,507	5,257	607,764
		88	28	89,793	448	0	1,667	91,908	12,458	104,366
106-44-5	p-Cresol	97	28	51,348	51	263,000	110	314,509	78,311	392,820
		96	29	41,796	825	262,500	361	305,482	13,462	318,944
		95	30	45,433	1,066	342,500	0	388,999	3,168	392,167
		88	18	640,703	1,143	152,000	62,291	856,137	643	856,780
1319-77-3 *	Cresol (mixed isomers)	97	143	1,669,098	7,693	1,233,058	2,716	2,912,565	16,381	2,928,946
		96	146	1,717,361	10,234	711,056	1,969	2,440,620	20,245	2,460,865
		95	153	1,606,560	15,011	648,882	2,350	2,272,803	47,059	2,319,862
		88	110	779,105	6,764	1,804,060	4,512	2,594,441	483,488	3,077,929
4170-30-3 *	Crotonaldehyde	97	7	35,145	1,200	1,400	0	37,745	0	37,745
		96	7	57,653	1,600	61,900	0	121,153	0	121,153
		95	7	101,579	680	391,500	0	493,759	0	493,759
		88	NR	NR	NR	NR	NR	NR	NR	NR

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

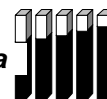


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
7440-50-8 *	Copper	97	603,925,697	783,470,245	225,424	3,551,787	41,296,581	2,006,069	9,658,847	1,444,134,650	368,800
		96	710,144,737	774,457,246	123,097	47,018	39,936,554	1,693,773	12,978,701	1,539,381,126	69,590
		95	607,914,418	778,338,567	506	42,073	41,198,595	1,776,837	11,340,847	1,440,611,843	91,982
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Copper compounds	97	310,075,700	167,470,119	0	25,643	42,125,835	4,452,985	57,625,028	581,775,310	3,073,536
		96	188,123,141	207,809,632	0	19,548	5,817,034	1,582,760	56,073,403	459,425,518	1,619,905
		95	215,002,488	188,618,241	0	31,078	60,463,597	2,459,760	49,520,858	516,096,022	1,323,102
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
8001-58-9 *	Creosote	97	66,432,245	1,700,000	702,717	67,254	865,430,718	362,602	2,606,664	937,302,200	497,301
		96	48,219,156	0	5,500	60,613	19,634,028	399,015	4,168,219	72,486,531	4,754,445
		95	64,447,471	2,180	6,100	94,871	163,131	298,027	3,208,184	68,219,964	322,988
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
120-71-8	p-Cresidine	97	0	0	0	0	0	32,491	5,127	37,618	0
		96	0	0	0	0	0	40,697	3,465	44,162	193
		95	0	0	0	0	0	51,611	6,806	58,417	3,400
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
108-39-4 *	m-Cresol	97	1,740,898	930,000	757,870	16,492	553,372	28,850	491,702	4,519,184	6
		96	2,104,414	820,002	789,240	38,925	229,581	27,824	568,609	4,578,595	41
		95	2,309,373	1,500,001	615,425	17,910	329,024	91,159	737,708	5,600,600	151
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
95-48-7	o-Cresol	97	89,071	0	347,145	1,632	234,441	34,727	424,417	1,131,433	5
		96	97,068	2	299,260	53,685	196,840	52,445	453,584	1,152,884	39
		95	171,098	76	304,801	321	184,032	125,072	606,682	1,392,082	116
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
106-44-5	p-Cresol	97	91,290	780,000	179,023	102,147	1,272,477	78,718	395,224	2,898,879	103
		96	90,880	500,002	430,589	116,622	468,502	409,214	320,100	2,335,909	410
		95	137,136	900,001	454,288	58,641	226,234	985,208	393,474	3,154,982	100
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1319-77-3 *	Cresol (mixed isomers)	97	339,319	464,967	4,539,730	397,074	9,992,872	275,741	2,888,535	18,898,238	4
		96	502,345	388,441	4,601,076	517,292	14,766,970	252,573	2,420,547	23,449,244	15
		95	1,052,270	187,427	5,045,270	637,169	8,558,967	1,143,472	2,203,525	18,828,100	6,809
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
4170-30-3 *	Crotonaldehyde	97	0	0	2,317,000	0	501,900	16	37,545	2,856,461	0
		96	0	0	22,600	0	571,700	0	120,873	715,173	0
		95	0	0	0	0	202,400	0	498,820	701,220	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
98-82-8	Cumene	97	241	1,474,589	1,343	859	8,245	1,485,036	18,491	1,503,527
		96	243	1,639,968	1,052	3,267	6,850	1,651,137	10,275	1,661,412
		95	237	1,876,779	1,490	9,403	1,102	1,888,774	70,457	1,959,231
		88	118	5,239,958	3,201	30,165	8,591	5,281,915	83,287	5,365,202
80-15-9	Cumene hydroperoxide	97	45	71,106	88	300,000	7,200	378,394	11,251	389,645
		96	40	46,826	26	180,169	6,300	233,321	11,147	244,468
		95	43	72,898	68	280,000	3,400	356,366	9,725	366,091
		88	40	192,523	1,784	371,000	250	565,557	22,944	588,501
135-20-6	Cupferron	97	1	0	0	0	0	0	0	0
		96	1	0	0	0	0	0	0	0
		95	1	0	0	0	0	0	0	0
		88	4	920	0	0	0	920	0	920
21725-46-2 *	Cyanazine	97	5	1,915	415	0	0	2,330	4,186	6,516
		96	7	1,915	421	0	0	2,336	2,695	5,031
		95	5	991	492	0	0	1,483	2,527	4,010
		88	NR	NR	NR	NR	NR	NR	NR	NR
--	Cyanide compounds	97	228	638,507	65,394	3,752,094	103,191	4,559,186	98,604	4,657,790
		96	227	849,455	108,844	3,477,384	97,938	4,533,621	284,436	4,818,057
		95	239	1,074,717	89,466	4,429,640	18,580	5,612,403	149,438	5,761,841
		88	393	1,248,012	195,244	3,707,326	107,208	5,257,790	581,408	5,839,198
1134-23-2 *	Cycloate	97	3	82	671	71	0	824	158	982
		96	2	49	1	2	0	52	28	80
		95	3	26	1,108	16	0	1,150	242	1,392
		88	NR	NR	NR	NR	NR	NR	NR	NR
110-82-7 *	Cyclohexane	97	371	6,500,730	80,765	322,903	17,660	6,922,058	51,600	6,973,658
		96	363	6,889,400	23,605	314,855	5,802	7,233,662	107,136	7,340,798
		95	364	8,086,710	19,108	238,200	10,809	8,354,827	105,429	8,460,256
		88	303	13,984,542	20,071	334,471	38,190	14,377,274	211,575	14,588,849
108-93-0 *	Cyclohexanol	97	27	179,623	420	3,616,560	12	3,796,615	810	3,797,425
		96	23	200,001	122	3,630,080	74	3,830,277	3,221	3,833,498
		95	24	170,168	154	3,623,000	0	3,793,322	70	3,793,392
		88	NR	NR	NR	NR	NR	NR	NR	NR
68359-37-5 *	Cyfluthrin	97	2	0	0	0	0	0	0	0
		96	3	26	0	0	350	376	0	376
		95	2	10	0	0	0	10	0	10
		88	NR	NR	NR	NR	NR	NR	NR	NR

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
98-82-8	Cumene	97	17,810,313	104,904	7,920,812	535,057	7,630,812	161,103	1,643,207	35,806,208	8,397
		96	16,076,751	130,250	9,440,498	1,029,651	10,335,977	134,929	1,716,887	38,864,943	13,234
		95	17,285,493	60,160	6,815,013	1,380,577	6,411,952	169,307	2,048,364	34,170,866	2,265
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
80-15-9	Cumene hydroperoxide	97	0	0	0	0	513,396	175,021	387,526	1,075,943	1,600
		96	0	0	0	12	550,669	177,787	249,443	977,911	0
		95	0	0	0	6	482,755	21,434	375,758	879,953	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
135-20-6	Cupferron	97	0	0	2,595	0	0	0	0	2,595	0
		96	0	0	679	0	0	90	0	769	0
		95	0	0	0	0	0	5,648	0	5,648	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
21725-46-2 *	Cyanazine	97	0	0	0	10,400	39,000	19,755	6,516	75,671	20,000
		96	0	0	0	0	39,000	24,351	5,508	68,859	0
		95	0	0	0	0	545,000	8,100	3,887	556,987	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Cyanide compounds	97	433,269	51,565	7,191,619	2,442	14,844,831	672,091	4,587,333	27,783,150	4,199
		96	588,476	29,182	120,114	22	10,953,335	600,541	4,686,097	16,977,767	50,694
		95	664,976	32,526	19,000	3,523	9,107,604	713,792	5,684,283	16,225,704	6,215
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1134-23-2 *	Cycloate	97	0	0	0	0	64	2,007	980	3,051	0
		96	0	0	0	0	0	1,006	80	1,086	0
		95	0	0	0	0	2,000	6,001	1,346	9,347	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
110-82-7 *	Cyclohexane	97	55,645,913	131,524	14,303,721	4,463,196	31,267,815	4,105,909	6,774,856	116,692,934	117,376
		96	61,439,379	500,775	8,021,506	3,065,988	33,947,355	1,909,190	7,236,590	116,120,783	46,227
		95	54,774,021	1,585,367	10,345,060	5,145,025	23,810,493	1,250,210	8,408,537	105,318,713	123,181
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
108-93-0 *	Cyclohexanol	97	0	19,759	2,020,445	145,035	272,856	100,776	3,843,305	6,402,176	0
		96	0	0	1,405,718	67,364	208,684	134,247	3,870,276	5,686,289	0
		95	0	0	677,199	9,673	153,667	13,076	3,838,896	4,692,511	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
68359-37-5 *	Cyfluthrin	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	1,110	1,233	386	2,729	0
		95	0	0	0	0	989	890	20	1,899	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
94-75-7 *	2,4-D (acetic acid)	97	19	4,991	59	250	255	5,555	6,616	12,171
		96	22	5,989	832	0	255	7,076	6,017	13,093
		95	27	6,888	1,083	250	4,325	12,546	17,430	29,976
		88	28	7,020	549	3,789	38,000	49,358	68,422	117,780
533-74-4 *	Dazomet	97	16	0	0	0	0	0	1,850	1,850
		96	11	648	197	0	0	845	4,900	5,745
		95	11	1,042	230	0	0	1,272	2,578	3,850
		88	NR	NR	NR	NR	NR	NR	NR	NR
53404-60-7 *	Dazomet, sodium salt	97	2	0	0	0	0	0	250	250
		96	2	0	0	0	0	0	250	250
		95	2	0	0	0	0	0	250	250
		88	NR	NR	NR	NR	NR	NR	NR	NR
94-82-6 *	2,4-DB	97	2	72	0	0	0	72	0	72
		96	2	720	0	0	0	720	0	720
		95	2	750	0	0	0	750	0	750
		88	NR	NR	NR	NR	NR	NR	NR	NR
1929-73-3 *	2,4-D butoxyethyl ester	97	3	500	0	0	0	500	0	500
		96	2	663	0	0	0	663	0	663
		95	3	510	0	0	0	510	0	510
		88	NR	NR	NR	NR	NR	NR	NR	NR
94-80-4 *	2,4-D butyl ester	97	3	1	0	0	0	1	0	1
		96	No reports received		0	0	0	3	0	3
		95	1	3	0	0	0	NR	NR	NR
		88	NR	NR	NR	NR	NR	NR	NR	NR
1163-19-5	Decabromo-dihenyl oxide	97	135	28,068	2,494	0	869,294	899,856	707,431	1,607,287
		96	137	45,608	3,675	0	200,838	250,121	644,939	895,060
		95	138	39,283	3,846	11	204,248	247,388	697,615	945,003
		88	58	29,604	500	292	21,450	51,846	555,181	607,027
13684-56-5 *	Desmedipham	97	1	83	0	0	0	83	0	83
		96	2	15	0	0	0	15	0	15
		95	1	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
1928-43-4 *	2,4-D 2-Ethylhexyl ester	97	11	5,606	0	0	0	5,606	2,036	7,642
		96	11	3,225	5	0	0	3,230	2,077	5,307
		95	11	2,765	250	0	0	3,015	3,131	6,146
		88	NR	NR	NR	NR	NR	NR	NR	NR

**Note: On-site Releases** from Section 5 of Form R. **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R. **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.





Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
94-75-7 *	2,4-D (acetic acid)	97	98,184	0	0	0	29,710	46,125	11,467	185,486	191
		96	78,758	0	0	0	25,360	22,156	11,874	138,148	191
		95	29,200	0	0	0	23,780	24,490	27,595	105,065	6,186
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
533-74-4 *	Dazomet	97	0	0	0	0	11,400	621	2,200	14,221	0
		96	0	0	3	0	15,261	3,100	6,045	24,409	71
		95	0	0	0	0	20,110	1,178	3,542	24,830	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
53404-60-7 *	Dazomet, sodium salt	97	0	0	0	0	90	12,072	100	12,262	0
		96	0	0	0	0	130	13,962	140	14,232	0
		95	0	0	0	0	56	7,807	0	7,863	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
94-82-6 *	2,4-DB	97	35	0	0	0	0	23	73	131	0
		96	0	0	0	0	0	556	270	826	0
		95	0	0	0	0	0	217	290	507	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1929-73-3 *	2,4-D butoxyethyl ester	97	0	0	0	0	0	0	349	349	0
		96	0	0	0	0	0	3,256	363	3,619	0
		95	0	0	0	0	0	1,600	318	1,918	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
94-80-4 *	2,4-D butyl ester	97	0	0	92,200	34	9,362	2	1	101,599	0
		96	No reports received								
		95	0	0	0	0	600	0	3	603	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1163-19-5	Decabromo-dihenyl oxide	97	289,049	57,236	646	6,602	50,690	370,462	1,646,812	2,421,497	0
		96	902,477	112,091	0	4,731	48,973	337,078	894,511	2,299,861	98
		95	992,673	144,205	0	18,686	32,138	322,935	928,854	2,439,491	3,794
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
13684-56-5 *	Desmedipham	97	0	0	0	0	0	379	83	462	0
		96	0	0	0	0	0	492	15	507	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1928-43-4 *	2,4-D 2-Ethylhexyl ester	97	3,982	0	0	0	0	11,151	7,540	22,673	0
		96	4,701	0	0	0	0	14,780	4,764	24,245	0
		95	36,531	0	0	0	0	10,318	5,468	52,317	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	On-site Releases						Off-site Releases		Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
615-05-4	2,4-Diamino-anisole	97	No reports received								
		96	No reports received								
		95	No reports received								
		88	1	0	0	0	0	0	0	0	
39156-41-7	2,4-Diamino-anisole sulfate	97	No reports received								
		96	No reports received								
		95	No reports received								
		88	1	0	0	0	0	0	0	0	
101-80-4	4,4'-Diamino-diphenyl ether	97	3	24	360	0	0	384	58	442	
		96	3	16	182	0	0	198	53	251	
		95	3	23	359	0	0	382	120	502	
		88	5	216	585	0	0	801	142	943	
95-80-7	2,4-Diamino-toluene	97	3	1,958	0	0	0	1,958	0	1,958	
		96	1	1,575	0	0	0	1,575	0	1,575	
		95	5	500	0	0	0	500	0	500	
		88	2	2,988	250	0	0	3,238	0	3,238	
25376-45-8	Diaminotoluene (mixed isomers)	97	13	11,454	556	27,000	8	39,018	284,524	323,542	
		96	13	17,249	590	7,600	10	25,449	23,286	48,735	
		95	11	9,594	5,522	7,050	55	22,221	28,625	50,846	
		88	13	21,097	3,288	174,000	295	198,680	289,591	488,271	
333-41-5 *	Diazinon	97	27	13,824	15	0	0	13,839	1,862	15,701	
		96	35	12,737	21	0	0	12,758	1,250	14,008	
		95	31	3,245	8	0	0	3,253	1,560	4,813	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
132-64-9	Dibenzofuran	97	36	34,770	15	0	280	35,065	54,220	89,285	
		96	36	39,254	62	0	265	39,581	28,986	68,567	
		95	37	18,704	2,843	0	220	21,767	19,824	41,591	
		88	110	71,093	1,510	0	9,929	82,532	181,799	264,331	
106-93-4 *	1,2-Dibromoethane	97	13	9,707	4	10	1	9,722	5,116	14,838	
		96	14	8,710	7	24	1	8,742	0	8,742	
		95	19	12,372	306	0	256	12,934	3	12,937	
		88	34	63,342	1,011	6,882	259	71,494	27,924	99,418	
124-73-2	Dibromotetra-fluoroethane (Halon 2402)	97	1	10	0	0	0	10	0	10	
		96	1	10	0	0	0	10	0	10	
		95	No reports received								
		88	NR	NR	NR	NR	NR	NR	NR	NR	

Note: On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
615-05-4	2,4-Diamino-anisole	97	No reports received								
		96	No reports received								
		95	No reports received								
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
39156-41-7	2,4-Diamino-anisole sulfate	97	No reports received								
		96	No reports received								
		95	No reports received								
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
101-80-4	4,4'-Diamino-diphenyl ether	97	0	0	0	0	150	6,272	379	6,801	0
		96	0	0	0	0	140	10,025	195	10,360	0
		95	0	0	0	0	4,929	380,289	377	385,595	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
95-80-7	2,4-Diamino-toluene	97	0	0	0	0	74,135	275	1,747	76,157	0
		96	0	0	0	0	66,836	279	1,575	68,690	0
		95	0	0	0	0	7,192	29,774	655	37,621	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
25376-45-8	Diaminotoluene (mixed isomers)	97	0	0	2,871,215	2,891,505	534,411	779,888	47,547	7,124,566	280,003
		96	0	0	4,731,680	2,749,895	442,162	1,145,550	48,567	9,117,854	460
		95	0	0	755,917	386,996	362,357	1,923,183	48,109	3,476,562	3,550
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
333-41-5 *	Diazinon	97	50,419	0	0	0	26,183	33,074	16,258	125,934	0
		96	43,105	0	0	0	107,961	11,649	13,736	176,451	0
		95	21,330	0	0	1	66,150	7,596	4,355	99,432	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
132-64-9	Dibenzofuran	97	128,988	960	240,210	16,170	27,823	335	102,426	516,912	6
		96	179,552	3,767	190	102	491,323	4,116	54,894	733,944	1,492
		95	70,546	25,036	113	176	405,125	1,471	37,508	539,975	13,217
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
106-93-4 *	1,2-Dibromoethane	97	0	0	0	30,740	11,862	645	9,611	52,858	0
		96	0	0	0	3,300	11,202	27,431	8,597	50,530	3,300
		95	0	0	60	17	34,174	72,467	11,740	118,458	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
124-73-2	Dibromotetra-fluoroethane (Halon 2402)	97	93,800	0	0	0	0	0	10	93,810	0
		96	96,000	0	0	0	0	0	10	96,010	0
		95	No reports received								
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
84-74-2 *	Dibutyl phthalate	97	108	39,485	151	160,000	1,267	200,903	21,072	221,975
		96	116	73,794	452	180,000	1,364	255,610	25,217	280,827
		95	124	104,500	3,981	390,000	1,402	499,883	25,920	525,803
		88	126	204,058	14,339	350,000	6,395	574,792	113,068	687,860
1918-00-9 *	Dicamba	97	7	1,041	26	65,535	0	66,602	2,180	68,782
		96	9	1,059	132	59,200	0	60,391	0	60,391
		95	6	12,580	250	113,600	0	126,430	0	126,430
		88	NR	NR	NR	NR	NR	NR	NR	NR
99-30-9 *	Dichloran	97	2	0	0	0	0	0	0	0
		96	4	10	0	0	0	10	0	10
		95	4	10	0	0	0	10	0	10
		88	NR	NR	NR	NR	NR	NR	NR	NR
95-50-1 *	1,2-Dichloro-benzene	97	30	158,412	2,039	5,600	794	166,845	20,461	187,306
		96	29	287,352	5,324	4,900	384	297,960	17,759	315,719
		95	27	271,522	3,789	26,000	11,521	312,832	28,228	341,060
		88	45	530,535	11,624	20,000	13,354	575,513	38,266	613,779
541-73-1	1,3-Dichloro-benzene	97	7	3,495	818	0	0	4,313	1	4,314
		96	6	5,118	897	0	0	6,015	0	6,015
		95	6	7,528	526	0	0	8,054	0	8,054
		88	6	15,282	1,281	0	0	16,563	290	16,853
106-46-7 *	1,4-Dichloro-benzene	97	23	262,266	1,728	2,000	1,960	267,954	289	268,243
		96	25	236,502	1,881	2,000	480	240,863	0	240,863
		95	24	242,372	1,287	0	3,100	246,759	3,328	250,087
		88	24	1,891,419	6,153	4,000	1,300	1,902,872	750	1,903,622
25321-22-6	Dichlorobenzene (mixed isomers)	97	7	15,274	0	0	0	15,274	9	15,283
		96	7	14,047	0	0	0	14,047	10	14,057
		95	9	5,443	0	0	0	5,443	9	5,452
		88	15	163,684	40	0	0	163,724	19,672	183,396
91-94-1	3,3'-Dichloro-benzidine	97	1	255	0	0	0	255	7,400	7,655
		96	1	2	0	0	0	2	5,550	5,552
		95	3	11	0	0	0	11	2,400	2,411
		88	14	255	752	0	0	1,007	209,785	210,792
612-83-9	3,3'-Dichloro-benzidine dihydrochloride	97	17	0	0	0	0	0	0	0
		96	16	5	0	0	0	5	0	5
		95	13	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR

Note: On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

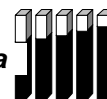


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
84-74-2 *	Dibutyl phthalate	97	32,125	18,084	468,416	205,442	132,864	60,660	249,098	1,166,689	58
		96	46,139	13,221	333,566	123,509	144,041	97,798	310,427	1,068,701	0
		95	51,458	26,123	1,060,538	172,397	314,761	115,184	385,723	2,126,184	173,700
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1918-00-9 *	Dicamba	97	0	0	0	0	61	58,850	68,501	127,412	0
		96	895	0	0	0	95	26	60,123	61,139	48
		95	510	0	0	0	0	29	126,662	127,201	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
99-30-9 *	Dichloran	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	55	30	10	95	0
		95	0	0	0	0	50	25	10	85	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
95-50-1 *	1,2-Dichloro-benzene	97	39,382,322	2,259,567	1,546,421	787,537	445,251	2,074,144	193,212	46,688,454	4,376
		96	6,431,032	2,890,984	612,089	584,857	318,912	2,678,549	308,194	13,824,617	15,880
		95	5,527,161	3,626,496	344,610	763,438	172,717	1,999,033	340,946	12,774,401	153
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
541-73-1	1,3-Dichloro-benzene	97	2,994	1,180	91,900	31	13	2,473	5,361	103,952	1
		96	1,793	875	0	0	9	2,284	6,041	11,002	4
		95	5,068	1,291	0	0	10	3,989	8,079	18,437	36
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
106-46-7 *	1,4-Dichloro-benzene	97	2,638,810	0	133,690	2,073	1,793	197,383	340,436	3,314,185	38
		96	4,249,806	0	354,424	12,038	130,406	508,226	241,809	5,496,709	960
		95	705,345	34,882	42,157	11,053	73,030	621,194	248,721	1,736,382	1,606
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
25321-22-6	Dichlorobenzene (mixed isomers)	97	0	0	293,565	745	230,056	10,523	15,282	550,171	0
		96	0	0	595,086	13,325	260,043	20,131	14,028	902,613	0
		95	0	0	266,997	5,165	79,032	3,684	5,452	360,330	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
91-94-1	3,3'-Dichloro-benzidine	97	0	0	0	0	7,400	74,000	7,300	88,700	0
		96	0	0	0	0	6,000	46,000	5,400	57,400	0
		95	0	0	0	22,000	14,000	1,600	2,701	40,301	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
612-83-9	3,3'-Dichloro-benzidine dihydrochloride	97	0	0	0	0	12,378	38,000	0	50,378	0
		96	0	0	0	0	10,114	100,000	1	110,115	0
		95	0	0	0	0	12,797	22,000	0	34,797	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases		
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds	
64969-34-2	3,3'-Dichloro-benzidine sulfate	97	1	0	0	0	0	0	0	0	0
		96	1	0	0	0	0	0	0	0	0
		95	1	0	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
75-27-4	Dichlorobromo-methane	97	1	2,400	0	0	100	2,500	0	2,500	
		96	1	2,400	0	0	110	2,510	0	2,510	
		95	1	2,300	0	0	50	2,350	0	2,350	
		88	1	13,440	0	0	0	13,440	0	13,440	
764-41-0	1,4-Dichloro-2-butene	97	2	2,650	0	1,800	0	4,450	0	4,450	
		96	2	3,110	0	3,400	0	6,510	0	6,510	
		95	2	3,950	0	4,500	0	8,450	0	8,450	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
110-57-6	trans-1,4-Dichloro-2-butene	97	No reports received								
		96	1	137	0	0	0	137	0	137	
		95	1	137	0	0	0	137	0	137	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
1649-08-7	1,2-Dichloro-1,1-difluoroethane (HCFC-132b)	97	1	1,400	60	0	0	1,460	170	1,630	
		96	1	930	20	0	0	950	89	1,039	
		95	1	890	20	0	0	910	89	999	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
75-71-8 *	Dichlorodifluoro-methane (CFC-12)	97	61	810,736	43	5,766	0	816,545	550	817,095	
		96	76	1,333,986	80	0	6,070	1,340,136	460	1,340,596	
		95	137	3,249,946	17,172	89	0	3,267,207	320	3,267,527	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
107-06-2 *	1,2-Dichloroethane	97	78	916,764	1,826	4,549	27	923,166	120,476	1,043,642	
		96	79	1,044,572	1,848	5,126	250	1,051,796	91,249	1,143,045	
		95	81	1,234,397	5,194	24,339	256	1,264,186	23,671	1,287,857	
		88	110	4,615,179	40,527	1,452,084	2,166	6,109,956	166,131	6,276,087	
540-59-0	1,2-Dichloro-ethylene	97	10	7,772	17	0	0	7,789	0	7,789	
		96	9	8,194	37	0	0	8,231	0	8,231	
		95	10	8,527	270	0	0	8,797	0	8,797	
		88	10	126,478	95	0	1	126,574	87,614	214,188	
1717-00-6	1,1-Dichloro-1-fluoroethane (HCFC-141b)	97	234	7,473,102	239	0	4,970	7,478,311	320,848	7,799,159	
		96	268	9,825,015	508	0	6,585	9,832,108	221,899	10,054,007	
		95	294	11,630,354	580	26	35,767	11,666,727	165,777	11,832,504	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
64969-34-2	3,3'-Dichloro-benzidine sulfate	97	0	0	0	0	750	3,800	0	4,550	0
		96	0	0	0	0	600	6,700	0	7,300	0
		95	0	0	0	0	1,300	2,400	0	3,700	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-27-4	Dichlorobromo-methane	97	0	0	0	0	0	0	2,500	2,500	0
		96	0	0	0	0	0	0	2,500	2,500	0
		95	0	0	0	0	0	0	2,300	2,300	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
764-41-0	1,4-Dichloro-2-butene	97	1,800,000	0	0	0	3,300,000	300,000	4,450	5,404,450	0
		96	1,800,000	0	0	0	3,000,000	320,000	6,510	5,126,510	0
		95	0	0	0	13,000	3,300,000	312,500	8,450	3,633,950	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
110-57-6	trans-1,4-Dichloro-2-butene	97	No reports received								
		96	0	0	0	0	0	0	137	137	0
		95	0	0	0	0	0	0	137	137	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1649-08-7	1,2-Dichloro-1,1-difluoroethane (HCFC-132b)	97	0	0	0	0	107,000	72,000	1,600	180,600	0
		96	0	0	0	0	96,000	37,000	1,000	134,000	0
		95	0	0	0	0	98,000	22,000	1,000	121,000	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-71-8 *	Dichlorodifluoro-methane (CFC-12)	97	211,228	154,956	0	90	13,617	40,079	817,009	1,236,979	86,550
		96	540,671	214,243	0	82	17,016	47,887	1,310,398	2,130,297	19,370
		95	552,377	466,714	408,747	225	126,167	114,628	3,241,865	4,910,723	18,429
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
107-06-2 *	1,2-Dichloroethane	97	50,816,240	17,461,011	47,830,815	420,603	53,835,059	1,741,248	902,553	173,007,529	27,434
		96	47,818,476	16,882,663	49,048,528	1,129,501	48,491,110	1,041,454	1,027,317	165,439,049	34,071
		95	59,314,824	16,921,135	32,517,232	787,622	74,728,291	1,630,158	1,266,749	187,166,011	23,294
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
540-59-0	1,2-Dichloro-ethylene	97	1,520,000	331,902	1,020,000	0	2,904,290	1,384	7,716	5,785,292	115
		96	620,000	27,151	1,560,000	0	1,828,252	8,701	7,741	4,051,845	250
		95	310,000	6,100	2,871,400	0	4,680,089	1,984	8,761	7,878,334	121
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1717-00-6	1,1-Dichloro-1-fluoroethane (HCFC-141b)	97	246,249	131,231	0	840,910	446,481	700,282	7,423,438	9,788,591	1,736
		96	389,753	274,663	0	280,373	2,069,813	1,092,025	10,007,098	14,113,725	6,850
		95	5,429,772	381,393	0	99,548	2,018,829	846,290	11,713,532	20,489,364	38,945
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
75-43-4	Dichlorofluoromethane (HCFC-21)	97	2	131,260	0	0	0	131,260	8,440	139,700
		96	3	145,285	0	0	0	145,285	10,676	155,961
		95	4	173,117	2	0	0	173,119	31,000	204,119
		88	NR	NR	NR	NR	NR	NR	NR	NR
75-09-2 *	Dichloromethane	97	804	47,665,155	9,492	528,026	11,180	48,213,853	226,085	48,439,938
		96	925	53,667,435	10,060	749,507	4,957	54,431,959	167,805	54,599,764
		95	1,003	58,033,908	28,620	1,140,335	2,064	59,204,927	176,467	59,381,394
		88	1,675	129,124,529	349,960	1,478,833	157,156	131,110,478	7,806,328	138,916,806
507-55-1	1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)	97	3	34,811	0	0	0	34,811	0	34,811
		96	2	29,000	0	0	0	29,000	0	29,000
		95	1	255	0	0	0	255	0	255
		88	NR	NR	NR	NR	NR	NR	NR	NR
422-56-0	3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)	97	3	28,251	0	0	0	28,251	0	28,251
		96	2	24,000	0	0	0	24,000	0	24,000
		95	1	255	0	0	0	255	0	255
		88	NR	NR	NR	NR	NR	NR	NR	NR
120-83-2	2,4-Dichlorophenol	97	5	3,296	134	16,020	0	19,450	0	19,450
		96	3	3,117	53	15,390	0	18,560	0	18,560
		95	3	3,580	245	15,900	0	19,725	0	19,725
		88	8	1,403	107	17,700	2	19,212	350	19,562
78-87-5 *	1,2-Dichloropropane	97	14	378,454	2,609	0	30	381,093	12,368	393,461
		96	11	514,428	1,855	0	150	516,433	5,330	521,763
		95	11	616,470	4,344	0	20	620,834	1,364	622,198
		88	12	1,395,304	23,785	0	3,400	1,422,489	1,131	1,423,620
10061-02-6	trans-1,3-Dichloropropene	97	3	468	0	0	0	468	3	471
		96	2	840	0	0	0	840	0	840
		95	1	256	0	0	0	256	0	256
		88	NR	NR	NR	NR	NR	NR	NR	NR
78-88-6 *	2,3-Dichloropropene	97	4	914	0	0	0	914	0	914
		96	4	1,050	19,900	0	0	20,950	0	20,950
		95	5	4,253	0	0	0	4,253	0	4,253
		88	NR	NR	NR	NR	NR	NR	NR	NR
542-75-6 *	1,3-Dichloropropylene	97	11	8,821	67	0	0	8,888	0	8,888
		96	11	9,447	1,270	0	0	10,717	0	10,717
		95	11	31,267	193	0	0	31,460	0	31,460
		88	8	54,590	250	0	0	54,840	0	54,840

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



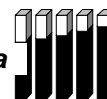


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
75-43-4	Dichlorofluoromethane (HCFC-21)	97	0	0	0	0	0	200	141,560	141,760	0
		96	0	0	0	0	0	200	152,560	152,760	3,225
		95	0	0	0	7,200	1,586	23,800	204,492	237,078	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-09-2 *	Dichloromethane	97	115,695,827	11,621,741	8,620,172	3,659,871	20,671,899	13,076,828	48,751,274	222,097,612	70,356
		96	112,064,947	12,671,173	5,598,974	3,434,972	23,348,110	12,620,503	54,788,785	224,527,464	230,653
		95	84,922,476	14,094,216	5,240,223	3,382,204	25,614,607	11,808,725	59,355,256	204,417,707	70,359
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
507-55-1	1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)	97	3,600	3,490	0	0	0	1,200	34,811	43,101	0
		96	4,841	2,400	0	0	0	1,430	29,000	37,671	0
		95	100	0	0	0	0	0	400	500	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
422-56-0	3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)	97	2,900	2,850	0	0	0	1,000	28,251	35,001	0
		96	3,960	1,900	0	0	0	1,170	24,000	31,030	0
		95	60	0	0	0	0	0	300	360	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
120-83-2	2,4-Dichlorophenol	97	1,450	0	3	0	315,825	0	19,445	336,723	0
		96	1,240	0	3	0	420,660	0	18,556	440,459	0
		95	1,460	0	3	0	336,936	0	19,720	358,119	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
78-87-5 *	1,2-Dichloropropane	97	38,220,000	3,300	22,160,926	13,021	7,776,117	90,189	390,794	68,654,347	53
		96	37,213,000	0	22,560,000	0	5,117,425	1,665	521,252	65,413,342	12
		95	56,000,000	0	28,380,000	0	11,573,182	7,768	620,353	96,581,303	1,200
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
10061-02-6	trans-1,3-Dichloropropene	97	11,000	160	12,144,000	124	6,590	500	465	12,162,839	0
		96	49,000	0	12,000,000	0	28,000	290	840	12,078,130	0
		95	0	0	11,000,000	0	0	0	250	11,000,250	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
78-88-6 *	2,3-Dichloropropene	97	9,200,000	0	2,500,000	2,200	280,000	1,500,000	910	13,483,110	20
		96	3,800,000	0	2,600,000	0	484,000	360,000	21,396	7,265,396	0
		95	6,100,000	1	4,200,000	0	1,960,000	510,000	4,253	12,774,254	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
542-75-6 *	1,3-Dichloropropylene	97	9,445,000	240	14,000,000	4,320	2,229,589	42,522	8,787	25,730,458	48
		96	3,036,700	0	14,000,000	4,724	614,179	53,527	10,680	17,719,810	3
		95	4,892,986	470	11,930,000	123	969,916	2,481	31,694	17,827,670	240
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
76-14-2 *	Dichlorotetrafluoroethane (CFC-114)	97	15	878,128	5	0	0	878,133	9	878,142
		96	18	846,454	4,936	0	0	851,390	2	851,392
		95	20	1,017,652	4,936	0	0	1,022,588	136	1,022,724
		88	NR	NR	NR	NR	NR	NR	NR	NR
34077-87-7	Dichlorotrifluoroethane	97	1	1,000	0	0	0	1,000	0	1,000
		96	1	1,000	0	0	0	1,000	0	1,000
		95	1	1,000	0	0	0	1,000	0	1,000
		88	NR	NR	NR	NR	NR	NR	NR	NR
354-23-4	1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a)	97	1	65,575	5	0	0	65,580	0	65,580
		96	1	69,000	250	0	0	69,250	0	69,250
		95	No reports received							
		88	NR	NR	NR	NR	NR	NR	NR	NR
306-83-2	2,2-Dichloro-1,1,1-trifluoroethane (HCFC-123)	97	13	180,046	58	0	0	180,104	69	180,173
		96	14	229,131	250	0	4	229,385	0	229,385
		95	11	113,006	251	0	0	113,257	0	113,257
		88	NR	NR	NR	NR	NR	NR	NR	NR
62-73-7 *	Dichlorvos	97	4	505	5	0	0	510	0	510
		96	4	255	5	0	0	260	1,228	1,488
		95	4	255	5	0	0	260	250	510
		88	7	1,050	0	0	0	1,050	505	1,555
115-32-2 *	Dicofol	97	6	510	0	0	0	510	629	1,139
		96	4	460	0	0	0	460	250	710
		95	4	750	0	0	0	750	250	1,000
		88	8	1,343	0	0	0	1,343	15,786	17,129
77-73-6	Dicyclopentadiene	97	80	355,102	19,866	0	707	375,675	9,410	385,085
		96	78	295,613	16,949	0	3	312,565	37,220	349,785
		95	70	340,455	5,464	0	475	346,394	6,888	353,282
		88	NR	NR	NR	NR	NR	NR	NR	NR
111-42-2	Diethanolamine	97	336	380,549	150,696	11,642	69,266	612,153	264,071	876,224
		96	333	477,200	143,158	16,211	42,170	678,739	100,667	779,406
		95	346	360,136	287,582	18,502	40,399	706,619	453,857	1,160,476
		88	332	641,588	438,213	238,317	133,456	1,451,574	372,707	1,824,281
117-81-7 *	Di-(2-ethylhexyl) phthalate	97	298	235,501	583	0	71,009	307,093	995,038	1,302,131
		96	311	442,655	279	0	59,612	502,546	1,768,107	2,270,653
		95	313	504,107	872	0	19,705	524,684	3,012,463	3,537,147
		88	303	1,217,313	2,776	3,091	20,748	1,243,928	3,629,163	4,873,091

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds	
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds				
76-14-2 *	Dichlorotetrafluoroethane (CFC-114)	97	89,000	53,493	0	0	1,419,246	194,248	877,909	2,633,896	0	
		96	100,880	200,686	0	0	1,631,367	16,154	859,154	2,808,241	0	
		95	19,819	14,634	0	0	1,608,479	38,271	1,018,687	2,699,890	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
34077-87-7	Dichlorotrifluoroethane	97	0	0	0	0	716,000	0	968	716,968	0	
		96	0	0	0	0	716,409	0	968	717,377	0	
		95	0	0	0	0	716,409	0	968	717,377	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
354-23-4	1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a)	97	0	0	0	0	0	0	60,585	60,585	5,000	
		96	0	0	0	0	0	0	69,500	69,500	0	
		95	No reports received									
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
306-83-2	2,2-Dichloro-1,1,1-trifluoroethane (HCFC-123)	97	225,000	0	0	0	194,831	400	179,611	599,842	0	
		96	253,000	0	0	0	4,916	5,963	209,265	473,144	20,580	
		95	253,000	1,304	0	0	18,400	24,465	113,218	410,387	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
62-73-7 *	Dichlorvos	97	0	0	0	0	10	50	1,306	1,366	0	
		96	0	0	0	57	10	309	1,429	1,805	0	
		95	33	0	0	297	10	536	550	1,426	24	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
115-32-2 *	Dicofol	97	0	0	0	0	0	928	841	1,769	0	
		96	19	0	0	0	0	100	210	329	0	
		95	150	0	0	0	0	95	282	527	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
77-73-6	Dicyclopentadiene	97	494,995	44,544	1,361,269	1,260,622	720,935	92,963	381,775	4,357,103	609	
		96	457,892	189,077	1,890,677	2,358,331	724,443	77,397	345,659	6,043,476	2,969	
		95	514,277	128,273	1,782,272	635,023	471,016	201,368	348,235	4,080,464	306	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
111-42-2	Diethanolamine	97	13,443	259,960	94,815	25,938	2,211,021	1,829,165	735,408	5,169,750	30,847	
		96	14,024	88,331	56,979	215,448	2,200,634	1,911,690	779,300	5,266,406	360	
		95	27,718	145,267	102,766	732,863	2,826,679	1,618,995	1,121,637	6,575,925	25,342	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
117-81-7 *	Di-(2-ethylhexyl) phthalate	97	2,840,681	1,699,965	1,298,057	311,076	238,989	257,221	1,120,306	7,766,295	5,272	
		96	3,361,947	4,018,431	354,639	270,794	290,002	348,640	2,277,019	10,921,472	1,406	
		95	2,644,796	4,019,467	100,013	258,725	557,557	357,115	3,647,733	11,585,406	341	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	Total On- and Off-site Releases Pounds	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
64-67-5	Diethyl sulfate	97	36	7,419	0	0	0	7,419	0	7,419	
		96	32	5,640	0	0	0	5,640	47	5,687	
		95	30	6,978	0	0	0	6,978	250	7,228	
		88	24	10,627	0	0	250	10,877	0	10,877	
35367-38-5 *	Diflubenzuron	97	1	0	0	0	0	0	0	0	
		96	1	0	0	0	0	0	0	0	
		95	1	0	0	0	0	0	0	0	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
101-90-6	Diglycidyl resorcinol ether	97	3	20	0	0	0	20	0	20	
		96	2	510	0	0	0	510	0	510	
		95	No reports received								
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
94-58-6	Dihydrosafrole	97	3	505	0	0	0	505	0	505	
		96	3	833	0	0	0	833	0	833	
		95	2	255	0	0	0	255	0	255	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
--	Diisocyanates	97	1,220	457,214	260	0	95,498	552,972	892,666	1,445,638	
		96	1,185	757,817	261	0	100,401	858,479	1,359,215	2,217,694	
		95	1,068	467,006	1,370	0	31,933	500,309	595,807	1,096,116	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
55290-64-7 *	Dimethipin	97	1	0	0	0	0	0	0	0	
		96	1	0	0	0	0	0	0	0	
		95	1	0	0	0	0	0	0	0	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
60-51-5 *	Dimethoate	97	4	71	0	0	0	71	0	71	
		96	6	485	10	0	0	495	0	495	
		95	4	270	5	0	250	525	1,500	2,025	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
119-90-4	3,3'-Dimethoxybenzidine	97	1	0	0	0	0	0	0	0	
		96	1	0	0	0	0	0	0	0	
		95	3	0	0	0	0	0	0	0	
		88	No reports received								
20325-40-0	3,3'-Dimethoxybenzidine dihydrochloride	97	7	0	0	0	0	0	0	0	
		96	7	10	0	0	0	10	0	10	
		95	5	10	0	0	0	10	0	10	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

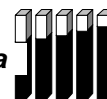


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
64-67-5	Diethyl sulfate	97	0	0	0	3,699,098	2,673	394	4,775	3,706,940	118
		96	0	3,293,100	0	0	4,621	5,579	5,738	3,309,038	30
		95	0	6,400,000	0	415	3,370	4,702	7,131	6,415,618	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
35367-38-5 *	Diflubenzuron	97	0	0	0	0	0	40	0	40	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
101-90-6	Diglycidyl resorcinol ether	97	0	0	0	800	0	0	15	815	0
		96	0	0	0	1,000	0	0	15	1,015	0
		95	No reports received								
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
94-58-6	Dihydrosafrole	97	0	0	0	0	0	53	100	153	0
		96	0	0	0	0	0	134	428	562	0
		95	0	0	0	0	10	999	0	1,009	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Diisocyanates	97	1,558,751	542,822	435,039	701,574	905,529	1,508,455	1,045,303	6,697,473	18,698
		96	848,302	417,929	91,890	458,857	530,211	1,277,284	2,095,614	5,720,087	69,219
		95	816,798	343,867	143,840	339,058	710,457	1,179,203	1,051,207	4,584,430	4,131
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
55290-64-7 *	Dimethipin	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
60-51-5 *	Dimethoate	97	243	0	0	0	0	598	912	1,753	0
		96	180	0	0	0	0	2,295	262	2,737	0
		95	200	0	0	0	0	242	1,900	2,342	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
119-90-4	3,3'-Dimethoxybenzidine	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	0	0	0	0
		88	No reports received								
20325-40-0	3,3'-Dimethoxybenzidine dihydrochloride	97	0	0	0	0	10	0	0	10	0
		96	0	0	0	0	100	0	10	110	0
		95	0	0	0	0	50	1	10	61	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	
124-40-3	Dimethylamine	97	71	467,039	46,242	18,250	4,135	535,666	15,016	550,682
		96	71	466,112	38,367	2,850	4,730	512,059	35,305	547,364
		95	71	455,216	24,990	45,250	3,000	528,456	38,137	566,593
		88	NR	NR	NR	NR	NR	NR	NR	NR
2300-66-5 *	Dimethylamine dicamba	97	3	140	0	0	0	140	0	140
		96	3	585	0	0	5	590	255	845
		95	3	505	0	0	0	505	154	659
		88	NR	NR	NR	NR	NR	NR	NR	NR
121-69-7	N,N-Dimethyl-aniline	97	21	39,009	1,385	0	0	40,394	0	40,394
		96	24	66,293	128	0	0	66,421	0	66,421
		95	21	34,412	388	0	0	34,800	435	35,235
		88	20	98,905	19,967	0	250	119,122	772	119,894
119-93-7	3,3'-Dimethyl-benzidine	97	No reports received							
		96	1	6	25	0	0	31	229	260
		95	No reports received							
		88	No reports received							
612-82-8	3,3'-Dimethyl-benzidine-dihydrochloride	97	1	0	0	0	0	0	0	0
		96	1	0	0	0	0	0	0	0
		95	No reports received							
		88	NR	NR	NR	NR	NR	NR	NR	NR
79-44-7	Dimethylcarbanyl chloride	97	1	118	0	0	0	118	0	118
		96	No reports received							
		95	No reports received							
		88	No reports received							
2524-03-0	Dimethyl chlorothio-phosphate	97	3	69	0	6,952	0	7,021	0	7,021
		96	3	10	0	0	0	10	0	10
		95	3	10	0	51,677	20	51,707	0	51,707
		88	NR	NR	NR	NR	NR	NR	NR	NR
68-12-2 *	N,N-Dimethyl-formamide	97	163	1,345,965	45,694	730,005	1,032	2,122,696	292,012	2,414,708
		96	148	1,654,918	43,956	1,220,000	1,628	2,920,502	212,291	3,132,793
		95	141	2,352,988	73,106	1,099,000	1,710	3,526,804	286,316	3,813,120
		88	NR	NR	NR	NR	NR	NR	NR	NR
57-14-7 *	1,1-Dimethyl hydrazine	97	4	902	0	0	0	902	437	1,339
		96	5	302	0	0	1	303	425	728
		95	4	299	0	0	0	299	5	304
		88	4	4,323	10	0	0	4,333	8,855	13,188

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
124-40-3	Dimethylamine	97	503,203	0	126,268	1,648	2,676,460	417,279	541,113	4,265,971	8,675
		96	494,604	0	8,000	1,625	2,626,186	313,237	543,576	3,987,228	6
		95	1,095,202	0	21,170	1,800	2,090,541	223,723	564,356	3,996,792	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
2300-66-5 *	Dimethylamine dicamba	97	0	0	0	0	0	0	140	140	0
		96	11,863	0	0	0	0	0	1,181	13,044	0
		95	7,981	0	0	0	0	0	803	8,784	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
121-69-7	N,N-Dimethylaniline	97	46,000	0	0	748,779	9,273	217,456	39,824	1,061,332	0
		96	48,000	0	0	1,087,051	6,895	174,595	65,805	1,382,346	0
		95	50,535	0	0	745,242	2,154	205,028	104,616	1,107,575	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
119-93-7	3,3'-Dimethylbenzidine	97	No reports received								
		96	0	0	0	0	2,287	0	260	2,547	0
		95	No reports received								
		88	No reports received								
612-82-8	3,3'-Dimethylbenzidine-dihydrochloride	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	No reports received								
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
79-44-7	Dimethylcarbanyl chloride	97	0	0	0	0	25,445	0	118	25,563	0
		96	No reports received								
		95	No reports received								
		88	No reports received								
2524-03-0	Dimethyl chlorothio-phosphate	97	0	0	0	0	0	4,806	7,021	11,827	0
		96	0	0	0	0	0	0	10	10	0
		95	0	0	0	0	0	0	51,727	51,727	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
68-12-2 *	N,N-Dimethylformamide	97	7,815,007	268,701	11,766,149	5,590,193	14,497,941	4,913,049	3,176,537	48,027,577	2,555
		96	5,447,326	309,948	9,633,941	4,104,258	12,111,386	4,360,884	3,788,607	39,756,350	12,338
		95	4,738,418	389,337	8,565,430	3,640,101	14,698,078	2,962,348	3,689,061	38,682,773	245
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
57-14-7 *	1,1-Dimethylhydrazine	97	0	2	0	1,900	2,314	796	905	5,917	0
		96	0	0	9,215	1	4,237	8,801	726	22,980	7,000
		95	0	57	0	0	3,639	10	302	4,008	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases		Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
105-67-9 *	2,4-Dimethylphenol	97	25	51,895	20	170,000	0	221,915	1,863	223,778	
		96	23	57,674	100	140,000	0	197,774	821	198,595	
		95	19	52,797	33	79,000	5	131,835	17	131,852	
		88	13	11,588	484	24,703	399	37,174	1,500	38,674	
131-11-3 *	Dimethyl phthalate	97	97	175,524	636	4,450	692	181,302	6,389	187,691	
		96	75	154,454	551	1,000	8	156,013	3,615	159,628	
		95	85	339,087	275	1,000	5	340,367	2,524	342,891	
		88	57	535,056	4,335	390	504	540,285	93,358	633,643	
77-78-1	Dimethyl sulfate	97	37	4,499	0	0	0	4,499	2,308	6,807	
		96	35	5,796	0	0	0	5,796	0	5,796	
		95	39	6,432	1	0	0	6,433	0	6,433	
		88	33	10,806	610	0	50	11,466	0	11,466	
99-65-0	m-Dinitrobenzene	97	1	421	81,587	0	451	82,459	0	82,459	
		96	1	421	83,436	0	310	84,167	0	84,167	
		95	2	547	84,906	0	1,066	86,519	0	86,519	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
528-29-0	o-Dinitrobenzene	97	2	54	1,044	0	58	1,156	0	1,156	
		96	2	54	1,067	0	40	1,161	0	1,161	
		95	3	65	1,086	0	136	1,287	0	1,287	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
100-25-4	p-Dinitrobenzene	97	1	14	29	0	16	59	0	59	
		96	1	15	29	0	11	55	0	55	
		95	1	16	30	0	37	83	0	83	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
88-85-7 *	Dinitrobutyl phenol	97	5	1,110	23	0	0	1,133	7,388	8,521	
		96	6	722	3,800	0	0	4,522	13,500	18,022	
		95	5	879	2	0	0	881	0	881	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
534-52-1 *	4,6-Dinitro-o-cresol	97	7	101	0	0	0	101	115,801	115,902	
		96	7	100	0	0	0	100	27,820	27,920	
		95	5	130	0	4,649	0	4,779	7,220	11,999	
		88	10	274	266	0	2	542	46,648	47,190	
51-28-5 *	2,4-Dinitrophenol	97	7	422	51,069	0	21	51,512	0	51,512	
		96	7	182	65,869	0	0	66,051	2	66,053	
		95	4	112	2,000	0	0	2,112	0	2,112	
		88	11	20,825	98,692	86,200	257	205,974	110,285	316,259	

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



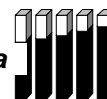


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
105-67-9 *	2,4-Dimethylphenol	97	23,760	67,958	1,319,661	59,659	633,730	21,718	223,980	2,350,466	2
		96	33,354	58,775	1,836,216	90,519	562,773	28,635	198,673	2,808,945	63
		95	37,140	30,368	1,573,273	50,362	397,965	75,967	131,351	2,296,426	24
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
131-11-3 *	Dimethyl phthalate	97	0	13,624	604,012	27,507	834,023	89,534	179,099	1,747,799	0
		96	0	0	225,020	84,850	360,632	68,567	127,131	866,200	0
		95	4,288	800	253,605	69,549	356,058	221,729	342,780	1,248,809	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
77-78-1	Dimethyl sulfate	97	0	54,525	62,628	0	10,457	2,323	4,223	134,156	0
		96	100,000	77,756	0	0	76,354	2	5,095	259,207	0
		95	0	171,230	1	0	352,841	3	5,535	529,610	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
99-65-0	m-Dinitrobenzene	97	0	0	0	0	734,287	11,352	82,459	828,098	0
		96	0	0	0	0	750,922	77	84,167	835,166	0
		95	0	0	0	0	764,156	0	86,519	850,675	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
528-29-0	o-Dinitrobenzene	97	0	0	0	0	103,312	1,452	1,156	105,920	0
		96	0	0	0	0	468,906	10	1,161	470,077	0
		95	0	0	0	0	444,156	0	1,287	445,443	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
100-25-4	p-Dinitrobenzene	97	0	0	0	0	28,432	396	59	28,887	0
		96	0	0	0	0	29,076	3	55	29,134	0
		95	0	0	0	0	29,589	0	83	29,672	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
88-85-7 *	Dinitrobutyl phenol	97	0	0	590,492	0	71,830	1,700	8,232	672,254	0
		96	0	0	267,404	0	7,701	330	18,012	293,447	0
		95	0	0	263,629	0	34,226	110	881	298,846	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
534-52-1 *	4,6-Dinitro-o-cresol	97	0	0	1,347,500	1,800	28,000	11,413	116,467	1,505,180	0
		96	0	0	1,446,612	0	29,000	12,866	3,638	1,492,116	0
		95	0	0	844,907	410	18,000	13,950	7,365	884,632	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
51-28-5 *	2,4-Dinitrophenol	97	0	0	674,605	69,679	1,923,457	1	51,522	2,719,264	0
		96	0	0	319,777	1	1,207,434	0	65,903	1,593,115	0
		95	0	0	556,712	9	1,160,000	220	2,103	1,719,044	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	Total On- and Off-site Releases Pounds	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
121-14-2	2,4-Dinitrotoluene	97	4	1,801	90	0	0	1,891	0	1,891	
		96	4	1,891	349	0	0	2,240	0	2,240	
		95	4	1,874	231	0	0	2,105	94	2,199	
		88	13	93,257	12,055	106,400	14,961	226,673	124,281	350,954	
606-20-2	2,6-Dinitrotoluene	97	1	438	24	0	0	462	0	462	
		96	1	472	94	0	0	566	0	566	
		95	1	469	126	0	0	595	0	595	
		88	7	87,597	957	27,000	0	115,554	30,882	146,436	
25321-14-6	Dinitrotoluene (mixed isomers)	97	6	11,551	63	56,000	0	67,614	46,491	114,105	
		96	5	14,815	586	33,000	0	48,401	121	48,522	
		95	6	14,811	284	17,000	0	32,095	6	32,101	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
39300-45-3 *	Dinocap	97	No reports received								
		96	1	0	0	0	0	0	0	0	
		95	1	0	0	0	0	0	0	0	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
123-91-1	1,4-Dioxane	97	44	141,262	196,272	0	4,609	342,143	305,787	647,930	
		96	49	120,869	226,998	0	5,409	353,276	479,388	832,664	
		95	54	223,144	216,689	0	5,736	445,569	352,996	798,565	
		88	73	612,633	203,320	0	11,702	827,655	10,954	838,609	
122-39-4 *	Diphenylamine	97	31	69,246	66	17,855	250	87,417	23,487	110,904	
		96	24	46,777	205	15,532	0	62,514	11,382	73,896	
		95	23	43,356	200	9,060	65	52,681	34,338	87,019	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
2164-07-0 *	Dipotassium endothall	97	1	0	0	0	0	0	0	0	
		96	2	43	0	0	0	43	0	43	
		95	1	0	0	0	0	0	0	0	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
136-45-8 *	Dipropyl iso- cinchomerate	97	No reports received								
		96	1	250	0	0	0	250	0	250	
		95	No reports received								
		88	NR	NR	NR	NR	NR	NR	NR	NR	
138-93-2 *	Disodium- cyanodithioimido- carbonate	97	5	0	0	0	0	0	0	0	
		96	3	0	0	0	0	0	0	0	
		95	3	0	0	0	0	0	0	0	
		88	NR	NR	NR	NR	NR	NR	NR	NR	

Note: On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
121-14-2	2,4-Dinitrotoluene	97	0	1,500	50,182	5,363	35,419	1,500	1,883	95,847	0
		96	0	7,300	51,527	0	35,270	7,300	2,021	103,418	0
		95	0	0	42,345	9	27,115	1,381	2,200	73,050	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
606-20-2	2,6-Dinitrotoluene	97	0	0	477	0	17,119	110	462	18,168	0
		96	0	0	1,711	0	23,500	26	566	25,803	0
		95	0	0	6,160	1	9,180	118	595	16,054	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
25321-14-6	Dinitrotoluene (mixed isomers)	97	0	0	0	2	213,007	501,414	68,691	783,114	75,831
		96	0	0	0	0	221,517	551,383	48,362	821,262	3,400
		95	0	0	0	9,100	181,321	882,089	32,321	1,104,831	2,500
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
39300-45-3 *	Dinocap	97	No reports received								
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
123-91-1	1,4-Dioxane	97	620,000	4	1,269,899	927,524	1,292,021	117,066	725,779	4,952,293	11
		96	5,592,026	846	3,126,659	1,372,579	1,074,367	176,966	952,090	12,295,533	1,239
		95	74,293	9,124	1,975,960	1,196,352	1,019,104	305,315	790,118	5,370,266	229
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
122-39-4 *	Diphenylamine	97	2,000,000	619	4,868,832	655,045	52,359	58,800	111,594	7,747,249	1
		96	1,200,000	25,549	2,190,000	422,084	38,849	238,942	73,138	4,188,562	1
		95	976,755	11,600	1,100,115	264,471	36,700	669,757	87,920	3,147,318	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
2164-07-0 *	Dipotassium endothall	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	12	43	55	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
136-45-8 *	Dipropyl isocinchomeronate	97	No reports received								
		96	70	0	0	0	0	0	30	100	0
		95	No reports received								
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
138-93-2 *	Disodium-cyanodithioimido-carbonate	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	
330-54-1 *	Diuron	97	10	2,060	257	0	0	2,317	2,637	4,954
		96	9	1,772	13	0	0	1,785	1,500	3,285
		95	8	2,765	10	0	5	2,780	1,950	4,730
		88	NR	NR	NR	NR	NR	NR	NR	NR
2439-10-3 *	Dodine	97	No reports received							
		96	1	10	0	0	0	10	0	10
		95	1	10	0	0	0	10	0	10
		88	NR	NR	NR	NR	NR	NR	NR	NR
120-36-5 *	2,4-DP	97	3	257	0	0	0	257	0	257
		96	3	512	0	0	5	517	39	556
		95	3	260	0	0	0	260	17	277
		88	NR	NR	NR	NR	NR	NR	NR	NR
2702-72-9 *	2,4-D sodium salt	97	1	0	0	0	0	0	0	0
		96	1	0	0	0	0	0	0	0
		95	1	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
106-89-8 *	Epichlorohydrin	97	77	314,249	9,304	0	9,510	333,063	4,016	337,079
		96	68	348,425	20,735	0	2,205	371,365	4,137	375,502
		95	68	321,450	26,937	0	18,874	367,261	893	368,154
		88	78	707,107	4,917	68,750	2,524	783,298	307	783,605
13194-48-4 *	Ethoprop	97	6	26	0	0	132,926	132,952	0	132,952
		96	6	866	0	0	108,933	109,799	250	110,049
		95	6	506	0	0	174,290	174,796	0	174,796
		88	NR	NR	NR	NR	NR	NR	NR	NR
110-80-5	2-Ethoxyethanol	97	25	130,062	1	0	33	130,096	500	130,596
		96	31	192,462	6	0	0	192,468	250	192,718
		95	40	222,940	891	0	0	223,831	12,595	236,426
		88	110	2,431,310	120,164	0	52	2,551,526	71,142	2,622,668
140-88-5	Ethyl acrylate	97	94	183,121	159	0	513	183,793	4,821	188,614
		96	95	186,791	199	0	516	187,506	32,734	220,240
		95	106	207,444	542	0	523	208,509	10,182	218,691
		88	105	245,982	1,211	0	265	247,458	7,110	254,568
100-41-4	Ethylbenzene	97	1,005	8,730,416	5,739	559,680	151,969	9,447,804	71,872	9,519,676
		96	1,018	9,454,718	6,851	335,932	59,862	9,857,363	95,603	9,952,966
		95	1,025	10,241,242	9,343	475,234	19,174	10,744,993	164,501	10,909,494
		88	564	7,718,781	15,970	72,914	175,180	7,982,845	421,334	8,404,179

Note: On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

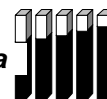


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
330-54-1 *	Diuron	97	250	0	0	0	0	1,032	4,564	5,846	0
		96	0	0	0	0	0	3,222	4,414	7,636	10
		95	300	0	0	2	0	5,711	6,568	12,581	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
2439-10-3 *	Dodine	97	No reports received								
		96	0	0	0	0	0	360	8	368	0
		95	0	0	0	0	0	270	5	275	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
120-36-5 *	2,4-DP	97	3,000	0	0	0	0	11	9	3,020	192
		96	4,256	0	0	0	0	14	552	4,822	192
		95	5,633	0	0	0	0	11	536	6,180	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
2702-72-9 *	2,4-D sodium salt	97	0	0	0	0	18,993	0	0	18,993	0
		96	0	0	0	0	3,956	0	0	3,956	0
		95	0	0	0	0	5,139	0	0	5,139	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
106-89-8 *	Epichlorohydrin	97	20,870,748	17,715	5,878,951	83,883	6,048,675	1,329,239	317,147	34,546,358	3,583
		96	20,158,532	2	5,863,583	75,040	2,992,269	1,453,853	368,762	30,912,041	16,505
		95	13,263,282	0	4,331,319	171,461	4,191,552	952,542	343,762	23,253,918	20,516
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
13194-48-4 *	Ethoprop	97	0	0	0	0	0	3,820	132,953	136,773	0
		96	3	0	0	0	0	921	109,332	110,256	0
		95	9	0	0	0	0	9,404	174,442	183,855	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
110-80-5	2-Ethoxyethanol	97	1,500	551	697,714	72,295	774,979	151,641	169,665	1,868,345	13,237
		96	6,210	6,581	410,576	169,509	731,710	173,077	171,113	1,668,776	20,424
		95	2,300	1,720	434,164	142,160	1,332,131	438,878	222,188	2,573,541	36,526
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
140-88-5	Ethyl acrylate	97	390,000	40,206	16,473,174	832,383	329,187	160,956	184,447	18,410,353	285
		96	284,024	45,510	7,177,162	791,794	16,524,991	353,726	217,298	25,394,505	23,571
		95	79	32,449	8,159,780	1,356,212	487,840	96,769	217,433	10,350,562	24,056
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
100-41-4	Ethylbenzene	97	30,036,542	6,986,553	35,462,089	11,283,948	14,600,710	1,805,729	9,470,382	109,645,953	29,727
		96	33,063,689	7,242,940	31,512,199	11,075,027	22,228,447	1,904,307	9,914,294	116,940,903	76,716
		95	24,907,594	6,757,634	40,925,948	11,299,949	19,251,248	1,785,143	10,813,225	115,740,741	13,316
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
541-41-3	Ethyl-chloroformate	97	4	4,017	5	0	5	4,027	0	4,027
		96	4	4,741	5	0	5	4,751	0	4,751
		95	3	2,020	5	0	5	2,030	0	2,030
		88	5	13,903	0	0	0	13,903	0	13,903
759-94-4 *	Ethyl dipropyl-thiocarbamate	97	4	2,208	113	9,501	0	11,822	2,778	14,600
		96	3	7,325	2	29	0	7,356	590	7,946
		95	4	2,363	291	373	0	3,027	9,366	12,393
		88	NR	NR	NR	NR	NR	NR	NR	NR
74-85-1 *	Ethylene	97	305	30,269,807	927	2,632	110	30,273,476	1,459	30,274,935
		96	297	35,228,216	25,228	0	8,080	35,261,524	10,845	35,272,369
		95	287	35,197,800	27,574	0	16	35,225,390	1,771	35,227,161
		88	274	50,503,039	15,214	17,203	13,250	50,548,706	11,432	50,560,138
--	Ethylenebisdithio-carbamic acid, salts and esters	97	6	571	0	0	0	571	600	1,171
		96	7	1,124	0	0	0	1,124	3,100	4,224
		95	3	1,630	0	0	0	1,630	0	1,630
		88	NR	NR	NR	NR	NR	NR	NR	NR
107-21-1 *	Ethylene glycol	97	1,275	5,529,550	638,973	3,542,486	416,478	10,127,487	1,564,736	11,692,223
		96	1,295	5,897,858	769,567	7,699,484	430,226	14,797,135	1,866,935	16,664,070
		95	1,306	7,231,755	807,318	12,554,675	850,534	21,444,282	1,469,980	22,914,262
		88	1,455	13,218,339	3,747,561	7,927,570	736,344	25,629,814	2,595,276	28,225,090
151-56-4	Ethyleneimine	97	1	6	0	0	0	6	0	6
		96	1	2	0	0	0	2	0	2
		95	1	3	0	0	0	3	0	3
		88	1	500	0	0	0	500	0	500
75-21-8 *	Ethylene oxide	97	156	926,370	3,634	15,147	986	946,137	52	946,189
		96	162	789,750	4,474	22,200	551	816,975	1,048	818,023
		95	166	856,239	5,230	130,000	2,208	993,677	8,663	1,002,340
		88	202	4,631,734	44,851	11,125	54,700	4,742,410	20,663	4,763,073
96-45-7 *	Ethylene thiourea	97	13	286	0	0	0	286	5,657	5,943
		96	11	518	0	0	0	518	7,501	8,019
		95	11	775	0	0	0	775	19,665	20,440
		88	6	500	0	0	0	500	2,250	2,750
75-34-3	Ethylidene dichloride	97	6	18,119	3	0	0	18,122	0	18,122
		96	6	21,950	11	0	0	21,961	0	21,961
		95	5	40,471	16	0	0	40,487	0	40,487
		88	NR	NR	NR	NR	NR	NR	NR	NR

Note: On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

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Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
541-41-3	Ethyl-chloroformate	97	0	0	0	0	2,970	0	3,890	6,860	0
		96	0	0	0	0	11,600	0	4,671	16,271	0
		95	0	0	0	0	3,300	0	1,980	5,280	10
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
759-94-4 *	Ethyl dipropyl-thiocarbamate	97	0	0	0	0	4,184	50,685	14,041	68,910	323
		96	0	0	0	0	0	9,610	9,489	19,099	13
		95	0	0	0	0	6,500	33,010	12,476	51,986	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
74-85-1 *	Ethylene <sup>a</sup>	97	115,302,995	14,410	1,151,632,258	14,141,146	496,425,339	1,798,509	29,264,637	1,808,579,294	602,721
		96	194,529,481	13,317	490,573,955	13,028,334	486,817,781	2,112,396	34,743,160	1,221,818,424	715,996
		95	196,803,539	3	485,914,835	10,615,177	495,572,836	2,116,568	34,753,277	1,225,776,235	765,579
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Ethylenebisdithio-carbamic acid, salts and esters	97	0	0	0	0	0	2,995	1,289	4,284	0
		96	0	0	0	0	0	18,882	6,222	25,104	0
		95	0	0	0	0	0	7,250	1,500	8,750	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
107-21-1 *	Ethylene glycol	97	452,791,021	76,990,931	6,836,406	17,472,536	55,214,574	29,734,918	12,985,925	652,026,311	66,961
		96	378,321,576	90,740,522	6,653,978	17,132,823	57,481,350	22,782,094	17,102,604	590,214,947	2,773,801
		95	366,425,025	101,106,327	5,926,147	13,154,599	65,627,898	34,252,045	22,517,305	609,009,346	305,087
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
151-56-4	Ethyleneimine	97	0	0	0	0	22,000	0	6	22,006	0
		96	0	0	0	0	22,000	0	2	22,002	0
		95	0	0	0	0	34,000	0	3	34,003	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-21-8 *	Ethylene oxide	97	70,880	1,610	38,000	7	11,312,884	105,228	598,688	12,127,297	389,284
		96	116,838	1,471	28,135	0	13,308,313	121,764	810,419	14,386,940	45,077
		95	127,110	307	16,940	0	9,974,486	70,255	990,179	11,179,277	15,962
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
96-45-7 *	Ethylene thiourea	97	780	0	0	0	0	4,170	5,334	10,284	0
		96	0	2,735	0	0	0	2,816	7,694	13,245	0
		95	1	840	0	0	1	6,282	19,877	27,001	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-34-3	Ethylidene dichloride	97	1,300,000	0	807,315	0	3,291,684	75,308	18,109	5,492,416	6
		96	1,300,000	0	140,773	0	2,410,240	18,514	22,034	3,891,561	22
		95	1,300,000	0	92,000	0	1,532,000	19,149	40,156	2,983,305	15,005
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

<sup>a</sup>One facility, TPI Petroleum in Ardmore, OK, reported on-site energy recovery for ethylene of 82,500,000 pounds in 1995, 36,250,000 pounds in 1996, and 422,000,000 pounds in 1997. The facility has since revised these quantities to zero. Another facility, Shell Chemical Co. in Geismar, LA, reported on-site energy recovery for ethylene of 193,830,000 pounds in 1997. The facility has since revised this quantity to 13,000,000 pounds. These revisions change on-site energy recovery for ethylene to 403,414,835 pounds in 1995, to 454,323,955 pounds in 1996, and to 548,802,258 pounds in 1997. Total production-related waste managed for ethylene changes to 1,143,276,235 pounds in 1995, to 1,185,568,424 pounds in 1996, and to 1,205,749,294 pounds in 1997.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases					Total On-site Releases Pounds	Off-site Releases	Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds		Transfers Off-site to Disposal Pounds	
52-85-7 *	Famphur	97	1	0	0	0	0	0	0	0
		96	2	0	0	0	0	0	0	0
		95	2	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
60168-88-9 *	Fenarimol	97	1	0	0	0	0	0	0	0
		96	2	0	0	0	0	0	0	0
		95	2	1,000	0	0	0	1,000	0	1,000
		88	NR	NR	NR	NR	NR	NR	NR	NR
13356-08-6 *	Fenbutatin oxide	97	2	3	0	3,420	0	3,423	0	3,423
		96	2	255	0	745	0	1,000	0	1,000
		95	1	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
72490-01-8 *	Fenoxycarb	97	1	0	0	0	0	0	0	0
		96	No reports received							
		95	1	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
39515-41-8 *	Fenpropathrin	97	1	0	0	0	0	0	0	0
		96	1	0	0	0	0	0	0	0
		95	1	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
55-38-9 *	Fenthion	97	1	2	0	0	0	2	1	3
		96	1	0	0	0	0	0	1	1
		95	1	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
51630-58-1 *	Fenvalerate	97	1	1	0	0	0	1	0	1
		96	1	1	0	0	0	1	0	1
		95	1	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
69806-50-4 *	Fluazifop butyl	97	1	0	0	0	0	0	0	0
		96	1	0	0	0	0	0	0	0
		95	No reports received							
		88	NR	NR	NR	NR	NR	NR	NR	NR
2164-17-2 *	Fluometuron	97	6	695	0	0	0	695	3,543	4,238
		96	5	987	0	0	0	987	2,505	3,492
		95	6	796	0	0	0	796	2,355	3,151
		88	2	500	0	0	0	500	3,700	4,200

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



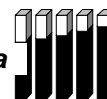


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
52-85-7 *	Famphur	97	0	0	0	0	0	2,664	0	2,664	0
		96	0	0	0	0	0	12,242	0	12,242	0
		95	0	0	0	0	0	3,758	0	3,758	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
60168-88-9 *	Fenarimol	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	310	650	960	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
13356-08-6 *	Fenbutatin oxide	97	0	0	0	0	0	0	1,000	1,000	0
		96	0	0	0	0	0	0	1,000	1,000	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
72490-01-8 *	Fenoxycarb	97	0	0	0	0	0	0	0	0	0
		96	No reports received								
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
39515-41-8 *	Fenpropathrin	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
55-38-9 *	Fenthion	97	5	0	0	0	0	1,000	2	1,007	0
		96	7	0	0	0	8	3,272	0	3,287	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
51630-58-1 *	Fenvalerate	97	0	0	0	0	0	1,000	0	1,000	0
		96	0	0	0	0	0	3,994	1	3,995	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
69806-50-4 *	Fluazifop butyl	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	No reports received								
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
2164-17-2 *	Fluometuron	97	0	0	0	0	0	12,784	3,251	16,035	0
		96	0	0	0	0	0	15,628	2,948	18,576	0
		95	0	0	0	2	0	16,900	5,646	22,548	13,000
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases		Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
7782-41-4	Fluorine	97	9	29,785	54,200	0	0	83,985	0	83,985	
		96	9	25,460	48,300	0	0	73,760	0	73,760	
		95	7	18,319	15,000	0	0	33,319	0	33,319	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
51-21-8	Fluorouracil	97	1	0	0	0	250	250	250	500	
		96	1	0	0	0	250	250	250	500	
		95	No reports received								
		88	NR	NR	NR	NR	NR	NR	NR	NR	
69409-94-5 *	Fluvalinate	97	1	0	0	0	0	0	0	0	
		96	1	0	0	0	0	0	0	0	
		95	1	0	0	0	0	0	0	0	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
133-07-3 *	Folpet	97	8	42	10	0	0	52	3,836	3,888	
		96	6	303	0	0	0	303	2,444	2,747	
		95	5	16	5	0	0	21	1,941	1,962	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
72178-02-0	Fomesafen	97	2	695	1,230	0	0	1,925	13,182	15,107	
		96	2	505	0	0	0	505	2,501	3,006	
		95	2	10	0	0	0	10	750	760	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
50-00-0 *	Formaldehyde	97	812	11,534,568	246,857	9,905,754	113,293	21,800,472	157,083	21,957,555	
		96	778	11,492,475	321,829	9,403,275	114,020	21,331,599	329,814	21,661,413	
		95	794	11,758,435	274,682	7,313,034	132,415	19,478,566	210,738	19,689,304	
		88	821	12,415,188	904,546	9,608,524	494,111	23,422,369	1,409,999	24,832,368	
64-18-6 *	Formic acid	97	272	1,704,989	35,026	11,067,451	3,536	12,811,002	88,548	12,899,550	
		96	268	2,114,089	84,133	11,001,260	3,010	13,202,492	103,871	13,306,363	
		95	260	592,387	15,759	11,492,418	3,205	12,103,769	26,357	12,130,126	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
76-13-1	Freon 113	97	50	1,063,709	1,876	0	0	1,065,585	2,355	1,067,940	
		96	73	1,402,179	786	0	0	1,402,965	1,147	1,404,112	
		95	138	2,608,436	3,829	6	0	2,612,271	2,560	2,614,831	
		88	1,438	70,382,591	32,894	5,965	27,799	70,449,249	1,924,043	72,373,292	
--	Glycol ethers	97	2,010	37,018,415	337,884	5,462	40,205	37,401,966	948,930	38,350,896	
		96	2,060	40,779,238	144,061	99,208	65,046	41,087,553	656,456	41,744,009	
		95	2,149	44,742,788	183,996	132,064	25,145	45,083,993	771,955	45,855,948	
		88	1,615	48,706,006	284,687	362,198	105,185	49,458,076	1,478,290	50,936,366	

**Note: On-site Releases** from Section 5 of Form R. **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R. **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds	
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds				
7782-41-4	Fluorine	97	0	0	0	0	19,500	0	83,985	103,485	1	
		96	0	0	0	0	19,005	0	73,522	92,527	1	
		95	0	0	0	0	15,000	0	33,300	48,300	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
51-21-8	Fluorouracil	97	1,285	0	0	0	0	0	0	1,285	0	
		96	930	0	0	0	0	0	0	930	0	
		95	No reports received									
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
69409-94-5 *	Fluvalinate	97	0	0	0	0	0	0	0	0	0	
		96	0	0	0	0	0	0	0	0	0	
		95	0	0	0	0	0	0	0	0	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
133-07-3 *	Folpet	97	221	0	0	0	1,800	368	3,889	6,278	0	
		96	0	0	0	0	1,501	234	2,513	4,248	0	
		95	0	80	0	0	801	290	1,962	3,133	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
72178-02-0	Fomesafen	97	0	0	0	0	0	5,847	18,428	24,275	0	
		96	0	0	0	0	0	0	4,801	4,801	0	
		95	0	0	0	0	0	0	200	200	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
50-00-0 *	Formaldehyde	97	90,741,776	643,236	14,449,258	411,094	83,203,482	3,436,540	21,883,140	214,768,526	22,015	
		96	87,473,900	42,804	8,429,785	213,655	72,305,821	2,494,150	21,679,742	192,639,857	91,745	
		95	75,909,072	56,999	6,758,262	423,718	68,631,079	2,921,365	19,459,502	174,159,997	268,331	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
64-18-6 *	Formic acid	97	862,842	33	5,770,006	2,436,610	145,340,583	3,157,416	13,149,351	170,716,841	119	
		96	883,880	48	6,705,732	2,211,708	132,459,697	3,077,914	13,622,256	158,961,235	834	
		95	95,200	28	7,215,445	236,018	104,948,398	1,541,252	12,253,610	126,289,951	9	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
76-13-1	Freon 113	97	610,745	139,726	50,633	11,000	191,059,556	299,648	1,065,260	193,236,568	729	
		96	692,774	155,047	74,113	54,651	219,059,366	1,111,330	1,386,340	222,533,621	116	
		95	2,355,210	916,598	0	103,937	250,260,926	582,924	2,613,238	256,832,833	30,129	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Glycol ethers	97	179,203,160	3,777,684	32,394,994	14,032,831	38,143,112	10,724,998	40,420,969	318,697,748	38,155	
		96	195,666,439	3,338,674	43,411,364	16,010,182	28,124,528	10,209,975	42,866,308	339,627,470	5,244	
		95	197,150,993	3,599,881	42,690,470	13,395,720	30,637,682	10,313,240	46,720,123	344,508,109	35,258	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases		Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
76-44-8 *	Heptachlor	97	No reports received								
		96	1	198	5	0	0	203	0	203	
		95	1	203	6	0	0	209	0	209	
		88	2	54,295	2	0	0	54,297	0	54,297	
118-74-1 *	Hexachloro-benzene	97	12	154	276	139	0	569	12,038	12,607	
		96	10	220	274	717	0	1,211	23,449	24,660	
		95	9	566	6,458	480	0	7,504	6,975	14,479	
		88	9	4,045	4	410	0	4,459	443,541	448,000	
87-68-3	Hexachloro-1,3-1,3-butadiene	97	7	1,410	9	299	0	1,718	200	1,918	
		96	7	2,381	256	952	0	3,589	310	3,899	
		95	7	3,310	661	434	0	4,405	252	4,657	
		88	9	2,508	153	220	0	2,881	19,640	22,521	
77-47-4 *	Hexachloro-cyclopentadiene	97	4	6,927	3	250	0	7,180	930	8,110	
		96	4	7,966	0	250	0	8,216	1,000	9,216	
		95	4	8,311	6	250	0	8,567	2,600	11,167	
		88	5	78,317	6	2,131	0	80,454	28,470	108,924	
67-72-1 *	Hexachloroethane	97	15	1,863	15	659	0	2,537	4,720	7,257	
		96	18	3,131	32	2,024	0	5,187	721	5,908	
		95	21	14,551	3,330	1,378	0	19,259	1,208	20,467	
		88	22	19,077	11	520	1	19,609	128,504	148,113	
110-54-3	n-Hexane	97	787	71,548,453	58,540	13,221	28,033	71,648,247	297,787	71,946,034	
		96	783	75,041,372	218,238	101,579	24,162	75,385,351	291,798	75,677,149	
		95	718	81,786,559	46,402	5,380	11,559	81,849,900	118,199	81,968,099	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
51235-04-2 *	Hexazinone	97	4	260	3,006	0	0	3,266	250	3,516	
		96	4	300	3,075	0	0	3,375	250	3,625	
		95	4	760	6,322	0	0	7,082	2,973	10,055	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
67485-29-4 *	Hydramethylnon	97	2	20	0	0	0	20	0	20	
		96	2	10	0	0	0	10	0	10	
		95	2	20	0	0	0	20	0	20	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
302-01-2	Hydrazine	97	44	11,659	12	0	250	11,921	30,430	42,351	
		96	45	10,443	23	0	250	10,716	18,549	29,265	
		95	46	13,920	3	0	5	13,928	23,504	37,432	
		88	55	35,199	2,149	0	29	37,377	24,522	61,899	

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

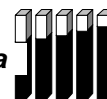


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
76-44-8 *	Heptachlor	97	No reports received								
		96	0	0	0	0	2,206	16,105	203	18,514	0
		95	0	0	0	0	3,850	851	209	4,910	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
118-74-1 *	Hexachloro-benzene	97	7,100	4	140,000	4,172	1,690,651	21,984	12,622	1,876,533	11
		96	7,100	1	240,000	2,214	2,132,566	42,461	24,301	2,448,643	155
		95	6,200	1	0	0	2,865,008	428,747	18,549	3,318,505	19
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
87-68-3	Hexachloro-1,3-1,3-butadiene	97	0	4	37,000	0	8,091,000	228,996	1,818	8,358,818	264
		96	0	0	66,000	0	6,107,496	279,289	3,007	6,455,792	700
		95	0	13	133,000	0	6,778,662	164,970	4,444	7,081,089	660,211
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
77-47-4 *	Hexachloro-cyclopentadiene	97	0	0	0	0	284,679	19,055	8,097	311,831	2,400
		96	0	0	0	800	246,437	56,248	9,496	312,981	210
		95	0	0	0	0	272,865	24,908	11,083	308,856	76
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
67-72-1 *	Hexachloroethane	97	0	3	897,000	103,469	3,209,000	43,379	2,286	4,255,137	4,628
		96	0	0	939,000	71,034	4,600,732	120,715	4,776	5,736,257	384
		95	4,800	0	1,232,400	75,132	4,875,108	109,188	30,153	6,326,781	129,205
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
110-54-3	n-Hexane <sup>b</sup>	97	371,918,727	14,085,860	30,687,478	19,134,402	72,743,563	4,724,666	69,383,458	582,678,154	704,970
		96	193,283,853	10,713,934	27,567,847	10,388,751	53,064,613	8,221,253	75,006,658	378,246,909	208,302
		95	4,125,699,524	7,007,918	25,426,831	14,614,680	50,030,503	8,044,247	82,208,251	4,313,031,954	80,332
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
51235-04-2 *	Hexazinone	97	0	0	0	0	3,831	260,835	3,535	268,201	0
		96	0	0	0	0	4,091	213,645	3,189	220,925	0
		95	50	0	0	0	6,954	216,172	9,410	232,586	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
67485-29-4 *	Hydramethylnon	97	0	0	0	0	0	475	10	485	0
		96	0	0	0	0	0	0	5	5	0
		95	0	0	0	0	0	3	17	20	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
302-01-2	Hydrazine	97	25	41	0	650	248,339	21,912	32,825	303,792	190
		96	0	101	300	65	338,596	6,117	28,433	373,612	0
		95	300	452	0	0	42,532	8,920	37,196	89,400	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

<sup>b</sup>Seven facilities in the food processing industry (SIC code 20) reported from 500 million pounds to 1 billion pounds each in on-site recycling of n-hexane in 1995, for a total 4,000,192,215 billion pounds. In 1996, these facilities reported no on-site recycling of n-hexane. On their 1996 Form Rs, these facilities also reported zero for on-site recycling of n-hexane for the prior year (1995). However, they have not revised their 1995 Form Rs. The apparent facility errors change on-site recycling of n-hexane to 125,507,309 pounds and total production-related waste to 312,839,739 pounds.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases		Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
10034-93-2	Hydrazine sulfate	97	3	0	0	110,000	0	110,000	0	110,000	
		96	2	0	0	350,000	0	350,000	0	350,000	
		95	3	0	0	260,000	0	260,000	0	260,000	
		88	4	1,172	0	355,000	0	356,172	0	356,172	
7647-01-0 *	Hydrochloric acid	97	1,000	59,250,310	1,216	489,005	48,070	59,788,601	447,822	60,236,423	
		96	1,068	65,507,723	4,980	260,005	23,148	65,795,856	236,994	66,032,850	
		95	1,939	69,500,018	6,871	788,214	24,091	70,319,194	2,369,385	72,688,579	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
74-90-8 *	Hydrogen cyanide	97	50	1,158,784	241	657,902	8	1,816,935	2,198	1,819,133	
		96	50	2,386,690	105	528,513	3	2,915,311	1,164	2,916,475	
		95	51	2,481,956	763	683,154	3	3,165,876	326	3,166,202	
		88	35	1,109,277	2,300	1,737,850	1,761	2,851,188	1,001	2,852,189	
7664-39-3 *	Hydrogen fluoride	97	603	12,422,535	31,680	2,879	15,047	12,472,141	118,837	12,590,978	
		96	593	12,959,840	10,691	2,620	36,834	13,009,985	173,050	13,183,035	
		95	566	11,431,159	8,702	3,845	24,078	11,467,784	1,012,893	12,480,677	
		88	535	14,732,294	189,928	250	13,002	14,935,474	3,467,471	18,402,945	
123-31-9	Hydroquinone	97	60	16,649	1,749	303,000	0	321,398	730	322,128	
		96	57	27,513	2,652	290,000	0	320,165	2,628	322,793	
		95	63	17,450	5,093	340,005	43	362,591	4,406	366,997	
		88	61	10,334	7,211	375,400	530	393,475	6,835	400,310	
55406-53-6 *	3-Iodo-2-propynyl butylcarbamate	97	18	3,396	21	0	295	3,712	5,957	9,669	
		96	15	3,630	15	0	292	3,937	6,505	10,442	
		95	11	3,959	10	0	265	4,234	12,763	16,997	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
13463-40-6	Iron pentacarbonyl	97	1	1,461	0	0	0	1,461	0	1,461	
		96	1	1,379	0	0	0	1,379	0	1,379	
		95	1	1,530	0	0	0	1,530	0	1,530	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
78-84-2	Isobutyraldehyde	97	20	213,407	1,336	0	0	214,743	34,992	249,735	
		96	23	195,073	1,791	2,374	1	199,239	1,000	200,239	
		95	24	256,279	752	44,075	47	301,153	0	301,153	
		88	15	685,918	773	60	1	686,752	0	686,752	
25311-71-1 *	Isofenphos	97	2	500	0	0	0	500	0	500	
		96	3	2,175	0	0	1,536	3,711	0	3,711	
		95	3	985	0	0	9,000	9,985	0	9,985	
		88	NR	NR	NR	NR	NR	NR	NR	NR	

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
10034-93-2	Hydrazine sulfate	97	0	0	0	0	1,700	0	110,002	111,702	0
		96	0	0	0	0	0	0	350,000	350,000	0
		95	0	0	0	0	1,900	1,900	260,000	263,800	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7647-01-0 *	Hydrochloric acid	97	72,162,656	4,211,505	180,000	6,673,069	782,653,538	11,481,225	60,106,472	937,468,465	45,552
		96	73,213,533	2,705,503	120,000	11,200	682,348,885	5,400,761	66,664,454	830,464,336	35,959
		95	195,177,725	15,817,005	100,650	1,510	1,056,734,385	26,019,613	71,050,587	1,364,901,475	94,383
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
74-90-8 *	Hydrogen cyanide	97	61,391	250	78,124,873	331	28,815,443	4,793	1,816,558	108,823,639	107
		96	73,467	0	33,847,854	331	27,343,220	4,559	2,919,400	64,188,831	323
		95	72,134	0	33,141,239	70	25,143,135	10,443	3,141,004	61,508,025	27,155
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7664-39-3 *	Hydrogen fluoride	97	100,395,164	232,309	0	5,910	120,560,424	3,065,078	12,270,652	236,529,537	113,189
		96	113,988,246	300,736	0	4,591	103,683,023	2,621,400	12,750,836	233,348,832	17,849
		95	92,471,855	223,187	0	9,201	103,032,344	2,541,891	12,615,590	210,894,068	11,479
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
123-31-9	Hydroquinone	97	710	0	6,034,221	8,232	1,380,026	63,041	320,498	7,806,728	11
		96	962	0	1,298,419	47,928	388,600	132,120	320,614	2,188,643	0
		95	960	0	1,000,833	37,786	512,185	86,342	363,320	2,001,426	43
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
55406-53-6 *	3-Iodo-2-propynyl butylcarbamate	97	6,954	0	0	7,225	339	158,524	5,317	178,359	0
		96	6,193	902	0	284	340	98,410	5,884	112,013	75
		95	1,755	2	0	1	300	62,552	5,151	69,761	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
13463-40-6	Iron pentacarbonyl	97	0	0	0	0	0	0	1,461	1,461	0
		96	0	0	0	0	0	0	1,379	1,379	0
		95	0	0	0	0	0	0	1,379	1,379	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
78-84-2	Isobutyraldehyde	97	0	1,400	1,400,398	575,253	734,068	23,593	249,335	2,984,047	0
		96	5,109	26,000	2,316,637	493,076	555,954	141,956	199,796	3,738,528	0
		95	0	9,647	1,193,119	567,515	609,409	76,894	300,129	2,756,713	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
25311-71-1 *	Isofenphos	97	2,000	0	0	0	0	2,000	989	4,989	0
		96	9,948	0	0	0	0	3,736	3,842	17,526	0
		95	690	0	0	0	0	9,000	9,690	19,380	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
67-63-0 *	Isopropyl alcohol (manufacturing)	97	76	922,901	250	0	0	923,151	250	923,401
		96	67	800,580	0	0	0	800,580	8,296	808,876
		95	71	931,046	0	0	0	931,046	2,577	933,623
		88	91	2,001,397	1,900	0	14	2,003,311	247,039	2,250,350
80-05-7	4,4'-Isopropylidenediphenol	97	116	217,654	3,777	0	290,009	511,440	500,386	1,011,826
		96	111	184,027	4,803	25,000	251,387	465,217	324,986	790,203
		95	113	155,599	5,809	82,000	86,697	330,105	425,671	755,776
		88	79	226,926	126,385	0	424,117	777,428	444,560	1,221,988
77501-63-4 *	Lactofen	97	3	77	0	0	0	77	28	105
		96	4	1,462	0	0	0	1,462	250	1,712
		95	2	787	0	0	0	787	250	1,037
		88	NR	NR	NR	NR	NR	NR	NR	NR
7439-92-1	Lead	97	804	424,888	14,718	0	4,229,841	4,669,447	5,827,004	10,496,451
		96	812	616,921	12,748	0	3,482,287	4,111,956	3,323,575	7,435,531
		95	842	728,896	10,595	0	2,361,315	3,100,806	2,565,396	5,666,202
		88	865	1,128,042	61,791	5	6,648,946	7,838,784	12,278,904	20,117,688
--	Lead compounds	97	816	877,637	36,516	263,980	13,767,859	14,945,992	30,465,946	45,411,938
		96	862	1,100,086	50,893	794	12,459,496	13,611,269	20,744,370	34,355,639
		95	840	1,226,844	52,821	912	13,486,182	14,766,759	19,325,293	34,092,052
		88	735	1,554,582	180,368	2,755	20,035,359	21,773,064	15,924,781	37,697,845
58-89-9 *	Lindane	97	7	54	5	0	0	59	753	812
		96	9	510	5	0	250	765	281	1,046
		95	10	510	0	0	0	510	20	530
		88	3	258	0	0	0	258	56	314
330-55-2 *	Linuron	97	3	10	5	0	0	15	0	15
		96	4	15	5	0	0	20	250	270
		95	4	270	5	0	5	280	1,250	1,530
		88	NR	NR	NR	NR	NR	NR	NR	NR
554-13-2	Lithium carbonate	97	33	10,907	255	300	13,700	25,162	234,559	259,721
		96	33	15,178	260	210	12,540	28,188	160,793	188,981
		95	26	14,967	0	0	0	14,967	600,001	614,968
		88	NR	NR	NR	NR	NR	NR	NR	NR
121-75-5 *	Malathion	97	21	4,665	5	0	0	4,670	250	4,920
		96	23	2,605	10	0	0	2,615	5	2,620
		95	21	2,512	0	0	0	2,512	31	2,543
		88	NR	NR	NR	NR	NR	NR	NR	NR

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



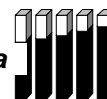


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
67-63-0 *	Isopropyl alcohol (manufacturing)	97	1,180,102	148,807	10,069,726	483,057	94,225	86,520	914,339	12,976,776	42
		96	88,859	10,938	3,274,940	424,241	146,031	52,826	787,933	4,785,768	5
		95	62,894	48,179	2,684,671	92,171	141,356	232,658	737,006	3,998,935	2
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
80-05-7	4,4'-Isopropylidenediphenol	97	98,401	67,350	9,258,664	72,155	1,599,908	137,685	753,985	11,988,148	5,912
		96	102,400	1,620	8,712,328	103,356	998,531	76,132	801,365	10,795,732	2,900
		95	56,348	2,377	5,024,865	28,758	824,095	127,796	646,822	6,711,061	121,310
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
77501-63-4 *	Lactofen	97	72	0	0	0	0	12,840	78	12,990	0
		96	13	0	0	0	0	3,856	1,539	5,408	221
		95	100	0	0	0	0	1	520	621	1,044
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7439-92-1	Lead	97	223,496,228	44,515,712	272,104	12,544	1,910,946	839,391	8,771,387	279,818,312	108,510
		96	209,173,326	40,321,708	89,267	9,879	2,336,543	1,484,910	6,511,647	259,927,280	56,907
		95	211,273,623	63,511,493	49,836	5,677	1,631,276	1,923,658	4,417,619	282,813,182	36,084
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Lead compounds	97	333,440,293	303,148,397	56,000	50,842	3,202,463	4,556,056	34,566,800	679,020,851	3,730,552
		96	396,536,906	308,960,682	0	66,447	1,321,438	7,550,907	30,983,410	745,419,790	602,191
		95	501,667,398	297,067,373	0	64,595	28,891,307	7,389,316	26,819,652	861,899,641	3,696,880
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
58-89-9 *	Lindane	97	84	0	0	0	0	2,790	67	2,941	0
		96	416	0	0	0	0	1,154	523	2,093	0
		95	326	0	0	0	0	3,206	272	3,804	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
330-55-2 *	Linuron	97	25	0	0	0	0	0	50	75	0
		96	0	0	0	0	0	92	142	234	0
		95	0	0	0	1	0	734	797	1,532	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
554-13-2	Lithium carbonate	97	31,190	0	0	0	1,200	2,400	241,578	276,368	0
		96	35,836	0	0	0	0	4,610	179,986	220,432	0
		95	18,000	0	0	0	2,200	690	167,040	187,930	446,000
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
121-75-5 *	Malathion	97	224	0	0	0	0	3,200	3,823	7,247	0
		96	204	0	0	0	0	2,782	1,758	4,744	0
		95	197	0	0	0	0	819	1,073	2,089	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases		Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
108-31-6	Maleic anhydride	97	210	471,855	5	5	5,520	477,385	9,160	486,545	
		96	205	575,200	15	10	1,000	576,225	10,666	586,891	
		95	209	347,391	18	5	1,406	348,820	14,429	363,249	
		88	199	676,778	12,580	240,000	250	929,608	132,148	1,061,756	
109-77-3	Malononitrile	97	3	119	0	104,975	0	105,094	0	105,094	
		96	3	250	0	475,997	0	476,247	0	476,247	
		95	2	0	0	432,956	0	432,956	0	432,956	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
12427-38-2 *	Maneb	97	8	11,641	0	0	11,641	23,282	15,613	38,895	
		96	5	0	0	0	0	0	250	250	
		95	6	273	0	0	0	273	2,461	2,734	
		88	6	2,265	250	0	0	2,515	5,285	7,800	
7439-96-5	Manganese	97	1,659	819,618	147,746	12	9,914,883	10,882,259	16,209,432	27,091,691	
		96	1,599	818,083	118,191	8	9,971,860	10,908,142	15,154,659	26,062,801	
		95	1,535	680,839	117,032	17	8,279,033	9,076,921	12,724,597	21,801,518	
		88	948	1,586,672	321,993	255	20,229,826	22,138,746	20,082,830	42,221,576	
--	Manganese compounds	97	1,181	1,521,980	4,206,997	14,412,830	50,170,481	70,312,288	46,231,218	116,543,506	
		96	1,044	1,810,245	2,014,241	15,630	40,391,142	44,231,258	32,617,434	76,848,692	
		95	1,019	2,897,638	1,519,184	3,590	41,735,058	46,155,470	25,888,561	72,044,031	
		88	545	1,801,463	681,469	6,816,070	84,227,842	93,526,844	20,670,921	114,197,765	
93-65-2	Mecoprop	97	7	1,275	0	0	5	1,280	250	1,530	
		96	7	1,690	0	0	255	1,945	3,896	5,841	
		95	9	1,816	0	0	0	1,816	2,304	4,120	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
149-30-4 *	2-Mercaptobenzo-thiazole	97	31	6,690	1,030	50,000	0	57,720	207,509	265,229	
		96	30	10,272	30	52,000	0	62,302	205,531	267,833	
		95	28	34,857	5	97,000	260	132,122	376,420	508,542	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
7439-97-6 *	Mercury	97	20	11,805	386	0	7,881	20,072	25,053	45,125	
		96	21	14,181	468	0	537	15,186	13,012	28,198	
		95	24	13,155	192	0	1,016	14,363	14,228	28,591	
		88	37	22,905	1,397	0	13,279	37,581	258,718	296,299	
--	Mercury compounds	97	9	2,626	34	41	0	2,701	25,508	28,209	
		96	13	2,916	73	9	0	2,998	29,437	32,435	
		95	10	3,156	136	6	0	3,298	207,097	210,395	
		88	15	2,376	9	27	0	2,412	17,916	20,328	

**Note: On-site Releases** from Section 5 of Form R. **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R. **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
108-31-6	Maleic anhydride	97	11,053	0	3,673,279	180,626	49,248,507	1,313,924	475,172	54,902,561	4,607
		96	6,847	7,307	3,333,344	98,075	36,712,170	1,307,254	577,753	42,042,750	14,386
		95	4,940	0	3,222,121	102,238	38,356,328	1,154,816	355,070	43,195,513	22,336
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
109-77-3	Malononitrile	97	0	0	0	0	3	690	105,094	105,787	0
		96	0	0	0	0	21	0	432,974	432,995	0
		95	0	0	0	0	0	0	432,956	432,956	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
12427-38-2 *	Maneb	97	0	0	0	0	0	3,684	3,972	7,656	23,282
		96	0	0	0	0	0	1,108	214	1,322	0
		95	525	0	0	3	0	8,800	7,861	17,189	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7439-96-5	Manganese	97	42,094,599	63,013,817	0	460	256,743	471,320	25,457,423	131,294,362	428,218
		96	33,022,463	77,040,179	0	936	371,832	1,209,070	24,792,253	136,436,733	167
		95	30,226,342	72,936,715	0	141	173,210	1,781,549	20,945,760	126,063,717	591
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Manganese compounds	97	18,174,571	47,149,281	20,349	35,437	1,552,540	5,388,284	108,079,180	180,399,642	508,687
		96	130,924,965	53,547,313	21,216	221,628	899,859	6,275,071	70,679,103	262,569,155	1,437,910
		95	145,347,982	66,269,857	0	199,783	1,023,502	5,906,367	65,827,970	284,575,461	1,350,500
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
93-65-2	Mecoprop	97	1,750	0	0	0	740	1,335	551	4,376	96
		96	1,972	0	0	0	990	2,322	5,364	10,648	96
		95	15,614	0	0	0	940	1,037	3,659	21,250	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
149-30-4 *	2-Mercaptobenzo-thiazole	97	3,932	10,538	0	819,814	403,993	11,463	265,831	1,515,571	0
		96	5,630	15,023	0	800,000	144,750	12,449	267,204	1,245,056	0
		95	5,405	104,645	0	931,100	128,323	136,948	516,905	1,823,326	630
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7439-97-6 *	Mercury	97	398,999	39,661	0	0	4,239	10,606	19,903	473,408	20
		96	803,882	23,898	0	0	4,114	4,143	24,017	860,054	0
		95	919,909	58,151	0	0	6,307	10,929	17,980	1,013,276	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Mercury compounds	97	39,004	7,338	0	0	0	2,802	25,061	74,205	0
		96	46,348	2,000	0	41	1	7,285	23,920	79,595	260
		95	125,287	0	0	61	0	4,597	25,638	155,583	179,000
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases		Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
150-50-5 *	Merphos	97	1	169	0	0	0	169	0	169	
		96	1	200	0	0	0	200	0	200	
		95	1	186	0	0	0	186	0	186	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
126-98-7	Methacrylonitrile	97	5	943	0	110,190	0	111,133	0	111,133	
		96	5	945	0	206,110	0	207,055	0	207,055	
		95	5	945	0	555,265	0	556,210	0	556,210	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
137-42-8 *	Metham sodium	97	10	5,959	3	0	0	5,962	310	6,272	
		96	13	3,449	4	0	2	3,455	15,937	19,392	
		95	11	4,387	1	0	252	4,640	13,050	17,690	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
67-56-1 *	Methanol	97	2,239	194,376,752	7,019,881	17,808,834	963,414	220,168,881	952,260	221,121,141	
		96	2,350	207,006,454	7,387,739	24,318,488	2,042,150	240,754,831	1,412,657	242,167,488	
		95	2,453	215,513,863	8,758,485	27,743,642	1,784,406	253,800,396	1,956,997	255,757,393	
		88	2,503	259,598,938	17,128,114	26,587,686	11,911,136	315,225,874	15,291,235	330,517,109	
94-74-6 *	Methoxone	97	7	755	0	0	250	1,005	4,853	5,858	
		96	7	1,032	250	0	250	1,532	4,778	6,310	
		95	5	1,261	0	0	0	1,261	1,810	3,071	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
72-43-5 *	Methoxychlor	97	3	0	0	0	0	0	0	0	
		96	3	25	0	0	0	25	0	25	
		95	2	0	0	0	0	0	0	0	
		88	12	131,031	252	0	258	131,541	8	131,549	
109-86-4 *	2-Methoxyethanol	97	44	1,035,779	16,006	0	123	1,051,908	1,500	1,053,408	
		96	45	865,483	11,672	0	0	877,155	489	877,644	
		95	46	888,228	12,407	0	5	900,640	535	901,175	
		88	95	5,899,669	40,520	750	7	5,940,946	57,362	5,998,308	
96-33-3	Methyl acrylate	97	64	184,651	666	15,902	8,940	210,159	1,657	211,816	
		96	67	187,236	8,145	147	162	195,690	32,136	227,826	
		95	71	243,914	5,962	159	0	250,035	865	250,900	
		88	61	443,496	1,687	200	30,260	475,643	4,765	480,408	
1634-04-4	Methyl tert-butyl ether	97	201	2,626,323	163,716	16,320	124	2,806,483	118,121	2,924,604	
		96	203	3,098,928	116,360	177,174	26,569	3,419,031	243,220	3,662,251	
		95	184	3,295,852	78,555	15,238	3,800	3,393,445	47,841	3,441,286	
		88	90	2,588,247	21,499	14,400	370	2,624,516	4,602	2,629,118	

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

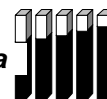


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
150-50-5 *	Merphos	97	0	0	0	0	0	0	169	169	0
		96	0	0	0	0	0	0	200	200	0
		95	0	0	0	0	0	0	186	186	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
126-98-7	Methacrylonitrile	97	0	0	0	0	394	0	111,133	111,527	0
		96	0	0	0	0	503	0	582,580	583,083	0
		95	0	0	0	0	3,189	0	556,210	559,399	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
137-42-8 *	Metham sodium	97	0	0	0	909	388	4,641	6,921	12,859	507
		96	35,780	0	0	557	1	5,689	17,664	59,691	47
		95	33,520	0	0	0	102	362	15,378	49,362	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
67-56-1 *	Methanol	97	652,646,250	19,047,443	338,486,384	92,054,052	960,162,594	131,720,870	226,499,488	2,420,617,081	198,274
		96	518,042,421	23,125,564	331,883,804	92,165,764	967,524,123	116,418,208	246,641,760	2,295,801,644	212,205
		95	494,203,260	30,646,930	366,619,613	94,822,191	954,344,678	119,500,287	260,279,814	2,320,416,773	295,052
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
94-74-6 *	Methoxone	97	3,391	0	0	0	0	271	6,361	10,023	96
		96	8,591	0	0	0	45	972	6,404	16,012	401
		95	19,510	0	0	0	58	27	3,144	22,739	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
72-43-5 *	Methoxychlor	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	807	11	818	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
109-86-4 *	2-Methoxy-ethanol	97	1,274,454	11,150	329,218	1,135,401	2,133,850	1,534,239	1,125,869	7,544,181	1,570
		96	1,704,300	11,084	146,744	1,304,811	2,181,353	819,884	943,755	7,111,931	1,113
		95	3,925,200	0	240,658	1,885,948	3,353,957	1,228,013	894,703	11,528,479	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
96-33-3	Methyl acrylate	97	1,034,001	7,822	490,480	402,873	2,513,567	41,418	184,972	4,675,133	0
		96	1,010,001	8,368	908,315	313,547	1,479,300	96,048	227,399	4,042,978	2
		95	910,001	40,769	736,924	184,260	2,134,388	114,535	253,968	4,374,845	248
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1634-04-4	Methyl tert-butyl ether	97	2,346,757	466,198	367,993	2,675,435	3,964,927	848,129	2,908,348	13,577,787	3,817
		96	1,693,888	553,776	807,055	1,856,329	2,468,177	1,773,894	3,467,427	12,620,546	202,032
		95	847,718	32,815	228,033	1,360,276	3,014,118	522,838	3,425,508	9,431,306	117,495
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
79-22-1	Methyl chloro-carbonate	97	3	3,387	5	0	5	3,397	0	3,397
		96	3	2,437	5	0	5	2,447	0	2,447
		95	3	2,595	5	0	5	2,605	0	2,605
		88	NR	NR	NR	NR	NR	NR	NR	NR
101-14-4	4,4'-Methylenebis (2-chloroaniline)	97	24	2,266	0	0	0	2,266	0	2,266
		96	23	506	0	0	750	1,256	5	1,261
		95	23	260	0	0	0	260	5	265
		88	8	250	0	0	0	250	0	250
101-61-1	4,4'-Methylenebis (N,N-dimethyl) benzeneamine	97	2	0	0	0	0	0	0	0
		96	2	1	0	0	0	1	0	1
		95	2	10	0	0	0	10	0	10
		88	1	250	0	0	7,000	7,250	1,150	8,400
74-95-3	Methylene bromide	97	5	57,743	0	0	0	57,743	0	57,743
		96	6	99,292	0	0	0	99,292	0	99,292
		95	5	63,091	0	0	0	63,091	0	63,091
		88	9	57,723	0	0	0	57,723	0	57,723
101-77-9	4,4'-Methylene-dianiline	97	26	9,221	86	15,050	0	24,357	16,765	41,122
		96	22	9,762	23	41,120	0	50,905	19,591	70,496
		95	25	10,337	63	23,110	0	33,510	9,423	42,933
		88	31	130,265	2,599	460,250	1,140	594,254	141,538	735,792
78-93-3 *	Methyl ethyl ketone	97	1,977	52,974,232	41,781	485,149	159,322	53,660,484	466,246	54,126,730
		96	2,135	59,957,401	74,989	432,772	119,565	60,584,727	282,531	60,867,258
		95	2,304	69,996,023	65,520	556,607	92,915	70,711,065	217,811	70,928,876
		88	2,533	141,554,636	92,076	255,955	166,597	142,069,264	5,014,725	147,083,989
60-34-4	Methyl hydrazine	97	4	867	0	0	0	867	0	867
		96	3	755	0	0	0	755	0	755
		95	3	500	0	0	0	500	0	500
		88	3	2,927	1	0	0	2,928	1,450	4,378
74-88-4	Methyl iodide	97	10	121,458	48	3,929	0	125,435	27	125,462
		96	8	65,225	0	23,500	0	88,725	3,300	92,025
		95	6	21,618	0	10,000	0	31,618	8,600	40,218
		88	3	8,944	5	250	0	9,199	250	9,449
108-10-1 *	Methyl isobutyl ketone	97	852	16,005,859	19,146	86,400	4,089	16,115,494	311,182	16,426,676
		96	920	18,991,358	22,569	162,000	4,858	19,180,785	40,872	19,221,657
		95	1,018	21,845,594	51,292	158,600	7,041	22,062,527	86,316	22,148,843
		88	1,011	32,035,833	762,108	116,650	31,770	32,946,361	1,966,488	34,912,849

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
79-22-1	Methyl chloro-carbonate	97	0	0	0	0	39,010	0	3,370	42,380	10
		96	0	0	0	0	4,110	0	2,470	6,580	0
		95	0	0	0	0	3,610	0	2,597	6,207	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
101-14-4	4,4'-Methylenebis (2-chloroaniline)	97	0	0	0	2,956	0	7,809	2,004	12,769	0
		96	0	0	0	2,105	0	11,309	219	13,633	0
		95	720	0	0	1,872	36	10,345	37	13,010	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
101-61-1	4,4'-Methylenebis (N,N-dimethyl) benzeneamine	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	1	1	0
		95	0	0	0	0	0	0	10	10	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
74-95-3	Methylene bromide	97	969,440	0	0	0	0	0	57,743	1,027,183	0
		96	1,211,800	0	0	0	270	0	99,292	1,311,362	0
		95	677,059	0	0	0	51,903	979	62,284	792,225	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
101-77-9	4,4'-Methylene-dianiline	97	3,700	138	960,204	5,478	97,414	71,650	36,244	1,174,828	0
		96	2,900	0	217,782	2,202	83,357	57,069	66,005	429,315	0
		95	2,300	0	17,801	17,405	87,919	95,059	35,337	255,821	7
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
78-93-3 *	Methyl ethyl ketone	97	53,877,400	19,088,054	77,959,795	41,862,752	70,061,993	5,743,445	54,277,916	322,871,355	205,539
		96	61,188,547	20,458,848	92,721,023	42,193,269	69,186,103	5,660,813	60,660,693	352,069,296	22,957
		95	66,104,773	21,169,467	112,461,715	43,627,504	69,349,991	6,329,138	69,954,400	388,996,988	229,484
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
60-34-4	Methyl hydrazine	97	0	800	0	0	5,584	1,642	504	8,530	1
		96	0	0	0	0	3,044	30	407	3,481	0
		95	0	0	0	0	20	5	400	425	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
74-88-4	Methyl iodide	97	0	0	0	6	9,686	6,704	126,398	142,794	98
		96	0	0	1,900	0	341	27	91,961	94,229	85
		95	0	0	140	0	19,376	760	40,187	60,463	59
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
108-10-1 *	Methyl isobutyl ketone	97	65,117,922	11,934,282	30,845,396	16,896,647	13,794,459	1,363,149	16,414,952	156,366,807	9,910
		96	52,349,128	13,931,441	20,171,448	18,528,963	13,262,621	1,741,967	19,131,845	139,117,413	2,357
		95	52,705,598	16,392,205	26,719,664	18,128,283	17,796,398	1,902,661	22,094,258	155,739,067	49,931
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
624-83-9	Methyl isocyanate	97	5	488	0	0	1	489	0	489
		96	6	1,489	0	0	0	1,489	0	1,489
		95	5	1,658	0	0	0	1,658	0	1,658
		88	12	10,235	0	0	64	10,299	8,400	18,699
556-61-6 *	Methyl-isothiocyanate	97	3	78	0	0	0	78	0	78
		96	3	82	0	0	0	82	0	82
		95	2	72	0	0	0	72	0	72
		88	NR	NR	NR	NR	NR	NR	NR	NR
75-86-5	2-Methylactonitrile	97	6	5,466	0	62,090	0	67,556	0	67,556
		96	6	4,145	0	0	0	4,145	0	4,145
		95	5	3,854	0	0	0	3,854	0	3,854
		88	NR	NR	NR	NR	NR	NR	NR	NR
80-62-6	Methyl-methacrylate	97	276	2,108,671	6,516	140,000	1,340	2,256,527	184,017	2,440,544
		96	267	1,840,216	2,551	160,000	1,072	2,003,839	107,184	2,111,023
		95	267	1,985,297	2,172	120,000	1,056	2,108,525	124,867	2,233,392
		88	218	3,630,569	28,437	327,220	8,119	3,994,345	276,567	4,270,912
924-42-5	N-Methylol-acrylamide	97	31	4,381	1,308	0	33	5,722	3,402	9,124
		96	28	3,114	1,170	0	32	4,316	776	5,092
		95	28	2,835	1,166	0	34	4,035	13	4,048
		88	NR	NR	NR	NR	NR	NR	NR	NR
298-00-0 *	Methyl parathion	97	4	481	0	0	0	481	0	481
		96	6	1,028	0	0	0	1,028	360	1,388
		95	5	1,442	0	0	0	1,442	2,684	4,126
		88	NR	NR	NR	NR	NR	NR	NR	NR
109-06-8	2-Methylpyridine	97	7	21,742	0	47,000	0	68,742	21	68,763
		96	7	73,846	0	65,062	0	138,908	504	139,412
		95	8	89,938	0	61,720	0	151,658	40	151,698
		88	NR	NR	NR	NR	NR	NR	NR	NR
872-50-4	N-Methyl-2-pyrrolidone	97	365	3,125,284	27,896	2,611,958	209,279	5,974,417	528,483	6,502,900
		96	337	2,882,044	52,589	2,907,704	72,849	5,915,186	550,926	6,466,112
		95	266	2,670,018	201,221	779,477	135,050	3,785,766	367,099	4,152,865
		88	NR	NR	NR	NR	NR	NR	NR	NR
21087-64-9 *	Metribuzin	97	6	359	24	0	0	383	0	383
		96	4	1,012	5	0	0	1,017	0	1,017
		95	3	1,936	9	0	0	1,945	0	1,945
		88	NR	NR	NR	NR	NR	NR	NR	NR

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



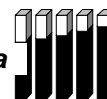


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
624-83-9	Methyl isocyanate	97	0	0	0	0	92,534	0	486	93,020	2
		96	0	0	0	0	91,617	3,007	1,476	96,100	4
		95	0	0	0	0	66,939	0	1,658	68,597	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
556-61-6 *	Methyl-isothiocyanate	97	0	0	0	0	0	191	78	269	0
		96	0	0	0	73	0	340	82	495	0
		95	0	0	0	62	0	82	72	216	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-86-5	2-Methylacetonitrile	97	0	0	0	0	15,270	360	67,525	83,155	0
		96	0	0	0	0	19,305	0	4,151	23,456	0
		95	0	0	0	0	19,317	0	3,855	23,172	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
80-62-6	Methylmethacrylate	97	1,282,943	51,663	2,433,787	1,959,654	5,787,869	437,999	2,287,796	14,241,711	576
		96	4,567,223	58,114	2,367,486	1,341,143	4,635,870	429,797	2,045,562	15,445,195	12,636
		95	4,665,497	20,746	2,050,094	1,396,720	5,218,371	732,552	2,152,816	16,236,796	3,234
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
924-42-5	N-Methylolacrylamide	97	0	0	0	3,553	13,038	50,351	9,125	76,067	1
		96	449	0	0	45,763	14,403	4,728	3,894	69,237	0
		95	360	0	0	294	14,240	4,373	3,087	22,354	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
298-00-0 *	Methyl parathion	97	0	0	0	0	0	72,300	318	72,618	68,000
		96	10	0	0	0	0	2,311	599	2,920	0
		95	29	0	0	0	0	0	3,664	3,693	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
109-06-8	2-Methylpyridine	97	66,000	190,000	30,000	7,818	52,000	25,043	68,935	439,796	840
		96	95,000	180,000	50,000	2,723	52,000	23,163	138,111	540,997	780
		95	53,000	57,000	19,000	470	37,000	98,212	150,962	415,644	930
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
872-50-4	N-Methyl-2-pyrrolidone	97	586,566	8,821,400	1,389,250	2,866,773	5,655,591	3,665,480	6,592,639	29,577,699	127
		96	1,035,645	6,910,278	810,116	2,650,467	5,113,756	3,239,484	6,468,341	26,228,087	1,720
		95	1,477,378	6,508,234	182,638	2,427,956	5,112,812	3,400,462	4,403,703	23,513,183	977
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
21087-64-9 *	Metribuzin	97	0	0	0	0	4,895	16,040	225	21,160	0
		96	0	0	0	0	38,864	13,213	1,017	53,094	0
		95	0	0	0	0	3,502	5,423	3,519	12,444	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases		Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
7786-34-7 *	Mevinphos	97	1	0	0	0	0	0	0	0	0
		96	1	0	0	0	0	0	0	0	0
		95	1	0	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
90-94-8	Michler's ketone	97	1	401	0	0	0	401	0	401	
		96	No reports received								
		95	1	1,577	0	0	0	1,577	0	1,577	
		88	4	1,100	0	0	0	1,100	0	1,100	
2212-67-1 *	Molinate	97	3	667	4	0	0	671	6,437	7,108	
		96	2	586	1	0	0	587	4,405	4,992	
		95	3	695	502	0	0	1,197	6,363	7,560	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
1313-27-5	Molybdenum-trioxide	97	159	222,987	39,645	276,580	64,083	603,295	453,770	1,057,065	
		96	163	190,687	27,504	209,900	60,626	488,717	627,817	1,116,534	
		95	158	178,292	27,305	333,730	77,594	616,921	1,013,388	1,630,309	
		88	101	111,195	139,021	197,115	97,238	544,569	573,624	1,118,193	
76-15-3	Monochloropenta-fluoroethane (CFC-115)	97	8	188,262	5	0	0	188,267	0	188,267	
		96	7	70,725	2,155	0	0	72,880	1	72,881	
		95	14	275,259	2,854	3	0	278,116	7	278,123	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
88671-89-0 *	Myclobutanil	97	4	500	0	0	0	500	0	500	
		96	2	0	0	0	0	0	0	0	
		95	2	0	0	0	0	0	0	0	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
142-59-6 *	Nabam	97	3	0	0	0	0	0	0	0	
		96	2	0	0	0	0	0	0	0	
		95	3	0	0	0	0	0	0	0	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
300-76-5 *	Naled	97	1	0	0	0	0	0	0	0	
		96	2	50	0	0	0	50	0	50	
		95	2	50	0	0	0	50	2,200	2,250	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
91-20-3 *	Naphthalene	97	533	2,485,690	13,098	187,927	82,204	2,768,919	501,134	3,270,053	
		96	555	2,921,583	11,836	296,776	301,513	3,531,708	582,717	4,114,425	
		95	528	2,685,298	43,311	33,569	32,085	2,794,263	474,106	3,268,369	
		88	420	5,165,426	22,518	50,946	123,697	5,362,587	1,359,184	6,721,771	

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
7786-34-7 *	Mevinphos	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
90-94-8	Michler's ketone	97	0	0	0	230	0	0	401	631	0
		96	No reports received								
		95	0	0	0	436	0	0	1,577	2,013	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
2212-67-1 *	Molinate	97	0	0	0	10	2,290	41,234	8,117	51,651	1,287
		96	0	0	0	13	0	156	5,870	6,039	8
		95	0	0	0	0	3,312	128,004	6,450	137,766	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1313-27-5	Molybdenum-trioxide	97	5,870,979	2,415,356	0	0	24,307	572,013	964,067	9,846,722	1,200
		96	6,492,490	2,956,337	0	3,276	31,277	478,671	1,207,616	11,169,667	84
		95	6,210,774	2,453,023	0	3,530	19,964	346,571	1,598,949	10,632,811	21,636
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
76-15-3	Monochloropenta-fluoroethane (CFC-115)	97	35,000	0	0	0	3,851	4,092	188,268	231,211	0
		96	110,000	0	0	0	68,635	14,262	72,881	265,778	0
		95	8,600	2,200	0	0	257,501	24,651	278,151	571,103	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
88671-89-0 *	Myclobutanil	97	0	0	0	0	0	1,809	220	2,029	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
142-59-6 *	Nabam	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	14,218	253	0	14,471	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
300-76-5 *	Naled	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	500	3,200	0	3,700	37
		95	0	0	0	0	1,000	2,600	0	3,600	9
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
91-20-3 *	Naphthalene	97	11,152,489	217,597	7,706,210	1,020,682	11,452,141	634,640	3,486,068	35,669,827	13,023
		96	13,827,289	266,253	5,197,247	3,244,055	10,955,233	709,435	4,068,152	38,267,664	287,833
		95	10,706,885	290,167	5,220,914	1,882,043	8,469,326	1,219,590	3,031,442	30,820,367	351,872
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
134-32-7	alpha-Naphthyl-amine	97	2	0	0	0	0	0	0	0
		96	2	0	0	0	0	0	0	0
		95	1	0	0	0	0	0	0	0
		88	3	590	101	0	0	691	0	691
7440-02-0	Nickel	97	2,002	411,558	24,911	25,642	237,649	699,760	3,872,894	4,572,654
		96	1,950	382,549	29,616	4,225	232,324	648,714	3,501,377	4,150,091
		95	1,921	316,533	25,171	6,370	367,348	715,422	3,778,766	4,494,188
		88	1,176	452,618	90,386	14,295	1,225,251	1,782,550	7,661,134	9,443,684
--	Nickel compounds	97	959	353,614	93,440	116,434	4,369,491	4,932,979	7,112,809	12,045,788
		96	925	325,006	72,898	86,278	3,782,669	4,266,851	5,428,916	9,695,767
		95	892	264,723	58,450	107,886	2,482,245	2,913,304	5,733,628	8,646,932
		88	579	273,178	132,233	224,968	2,384,594	3,014,973	6,208,727	9,223,700
--	Nicotine and salts	97	39	434,949	956	0	0	435,905	351,431	787,336
		96	33	443,945	881	0	0	444,826	426,142	870,968
		95	26	375,000	755	0	135	375,890	274,712	650,602
		88	NR	NR	NR	NR	NR	NR	NR	NR
1929-82-4 *	Nitrapyrin	97	3	0	0	0	0	0	0	0
		96	2	1	0	0	0	1	0	1
		95	3	7	119,451	0	0	119,458	0	119,458
		88	NR	NR	NR	NR	NR	NR	NR	NR
--	Nitrate compounds	97	916	396,856	148,846,835	40,552,913	3,079,041	192,875,645	4,498,878	197,374,523
		96	850	344,204	125,065,773	39,398,562	3,754,465	168,563,004	2,722,699	171,285,703
		95	766	415,465	128,553,207	47,589,521	3,883,521	180,441,714	5,352,853	185,794,567
		88	NR	NR	NR	NR	NR	NR	NR	NR
7697-37-2 *	Nitric acid	97	1,767	2,656,400	421,395	18,399,512	317,845	21,795,152	1,881,909	23,677,061
		96	1,755	3,120,705	221,524	17,483,972	204,274	21,030,475	1,479,266	22,509,741
		95	1,812	2,357,243	46,591	18,755,717	291,656	21,451,207	4,818,362	26,269,569
		88	1,921	8,278,184	1,380,565	25,485,680	1,330,695	36,475,124	7,929,318	44,404,442
139-13-9	Nitrilotriacetic acid	97	9	0	7,474	2,400	0	9,874	0	9,874
		96	8	10	78	1,500	0	1,588	0	1,588
		95	7	1	34	2,900	0	2,935	0	2,935
		88	14	2,500	5,100	0	5,100	12,700	250	12,950
100-01-6	p-Nitroaniline	97	4	12,018	13	0	0	12,031	0	12,031
		96	5	11,760	50	0	0	11,810	0	11,810
		95	4	11,205	2	0	0	11,207	0	11,207
		88	NR	NR	NR	NR	NR	NR	NR	NR

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

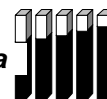


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
134-32-7	alpha-Naphthylamine	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7440-02-0	Nickel	97	29,304,518	87,162,134	26,213	57,392	1,398,988	646,126	3,953,432	122,548,803	4,374
		96	34,502,015	76,142,803	16,476	30,184	997,141	780,637	3,586,568	116,055,824	2,892
		95	37,931,558	78,106,397	127	768	1,547,891	1,033,883	3,241,070	121,861,694	19,071
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Nickel compounds	97	9,114,702	32,218,575	31,657	5,410	4,651,041	1,042,021	10,770,118	57,833,524	190,541
		96	7,760,725	27,951,302	37,998	1,373	2,675,371	766,240	10,021,487	49,214,496	5,228
		95	14,059,031	33,998,974	0	2,808	5,627,326	1,310,270	7,216,959	62,215,368	332,577
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Nicotine and salts	97	0	82,149	0	0	878,410	311,032	744,317	2,015,908	14,000
		96	8,896	158,695	0	0	846,164	294,892	811,607	2,120,254	0
		95	0	99,383	0	0	275,790	301,170	649,157	1,325,500	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1929-82-4 *	Nitrapyrin	97	0	0	0	0	0	1,255,450	0	1,255,450	0
		96	0	0	0	550	0	130	1	681	0
		95	0	0	0	7,100	0	380	128,628	136,108	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Nitrate compounds	97	99,267,015	1,600,700	0	271,802	49,691,186	73,381,286	202,947,298	427,159,287	182,840
		96	103,278,523	4,593,696	0	98,981	36,843,509	65,938,182	177,503,935	388,256,826	195,054
		95	95,090,268	2,463,043	0	0	26,254,866	59,815,037	189,226,086	372,849,300	110,000
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7697-37-2 *	Nitric acid	97	28,640,127	2,812,833	27,246	257	306,863,652	16,414,079	22,042,219	376,800,413	115,681
		96	24,081,964	2,407,383	165,558	330	303,255,649	15,601,063	21,802,428	367,314,375	62,094
		95	28,235,834	3,666,454	250,245	255	239,314,648	15,972,367	27,277,730	314,717,533	118,938
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
139-13-9	Nitrilotriacetic acid	97	0	0	0	0	1,238,653	12,140	9,874	1,260,667	0
		96	0	0	0	0	1,017,756	18,000	1,588	1,037,344	0
		95	2,500	0	0	0	969,141	1,872	2,935	976,448	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
100-01-6	p-Nitroaniline	97	0	0	0	0	115	178,165	12,233	190,513	0
		96	0	0	0	0	460	106,200	12,310	118,970	0
		95	0	0	7	0	266	93,016	12,007	105,296	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
99-59-2	5-Nitro-o-anisidine	97	1	10	0	0	0	10	0	10
		96	1	10	0	0	0	10	0	10
		95	1	10	0	0	0	10	0	10
		88	No reports received							
98-95-3 *	Nitrobenzene	97	14	64,314	299	638,059	7	702,679	240	702,919
		96	13	37,333	951	193,527	46	231,857	3,825	235,682
		95	16	25,524	874	330,344	43	356,785	961	357,746
		88	19	41,279	7,283	819,000	3,538	871,100	69,570	940,670
55-63-0	Nitroglycerin	97	18	10,177	15,622	0	0	25,799	0	25,799
		96	19	22,466	18,508	0	3,781	44,755	3,610	48,365
		95	20	26,077	13,300	0	0	39,377	0	39,377
		88	22	52,383	2,746	0	11,640	66,769	2	66,771
88-75-5	2-Nitrophenol	97	4	47	39	0	0	86	0	86
		96	4	33	51	0	0	84	90	174
		95	4	38	50	0	0	88	0	88
		88	4	33,689	1	0	2	33,692	13,100	46,792
100-02-7 *	4-Nitrophenol	97	7	969	0	0	0	969	0	969
		96	7	935	0	0	0	935	0	935
		95	6	945	0	0	0	945	0	945
		88	7	7,855	0	6,300	7	14,162	70	14,232
79-46-9 *	2-Nitropropane	97	3	23,727	2,789	0	0	26,516	25	26,541
		96	4	34,288	2,790	0	0	37,078	0	37,078
		95	5	31,265	3,000	0	0	34,265	0	34,265
		88	15	389,385	4,300	257,000	0	650,685	4,785	655,470
62-75-9	N-Nitrosodi-methylamine	97	No reports received							
		96	No reports received							
		95	No reports received							
		88	1	0	0	0	0	0	0	0
86-30-6	N-Nitrosodi-phenylamine	97	3	10	0	0	0	10	0	10
		96	3	10	0	0	0	10	0	10
		95	2	10	0	0	0	10	0	10
		88	2	0	27	34,000	0	34,027	0	34,027
156-10-5	p-Nitrosodiphenyl-amine	97	2	24	0	0	0	24	210	234
		96	2	24	0	0	0	24	420	444
		95	2	24	0	0	0	24	520	544
		88	2	15	0	2,000	0	2,015	180	2,195

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
99-59-2	5-Nitro-o-anisidine	97	0	0	0	0	0	0	5	5	0
		96	0	0	0	0	0	0	5	5	0
		95	0	0	0	0	0	0	5	5	0
		88	No reports received								
98-95-3 *	Nitrobenzene	97	1,432,350	0	2,229,827	6,795	1,150,986	1,298,784	704,915	6,823,657	1,520
		96	1,052,450	0	1,781,334	15,880	1,146,582	602,727	230,710	4,829,683	373
		95	1,277,200	0	1,479,583	79,781	1,297,305	639,061	354,550	5,127,480	647
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
55-63-0	Nitroglycerin	97	18,000	0	0	28,675	219,672	69,222	26,009	361,578	1
		96	18,000	0	0	34,441	344,442	15,649	40,974	453,506	0
		95	24,151	0	0	0	428,538	59,598	39,387	551,674	6
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
88-75-5	2-Nitrophenol	97	0	0	62,000	0	95,000	34,000	91	191,091	0
		96	0	0	53,000	0	75,000	21,000	179	149,179	0
		95	0	0	28,000	6	120,000	23,311	83	171,400	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
100-02-7 *	4-Nitrophenol	97	0	0	40,372	4	79,013	916,121	991	1,036,501	0
		96	0	0	12,990	1	60,000	476,000	940	549,931	0
		95	0	0	10,469	3	65,000	574,800	950	651,222	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
79-46-9 *	2-Nitropropane	97	0	0	1,165,892	837	53,022	5,803	26,516	1,252,070	0
		96	0	0	0	50	58,297	12,467	37,076	107,890	0
		95	0	520	140,000	81	63,028	0	34,023	237,652	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
62-75-9	N-Nitrosodimethylamine	97	No reports received								
		96	No reports received								
		95	No reports received								
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
86-30-6	N-Nitrosodiphenylamine	97	0	0	0	340,000	72,865	771	10	413,646	1
		96	0	0	0	230,000	47,762	120,000	10	397,772	0
		95	0	0	0	0	0	340,000	10	340,010	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
156-10-5	p-Nitrosodiphenylamine	97	0	0	7,800	14,890	0	270	1,224	24,184	0
		96	0	0	9,400	17,000	0	180	444	27,024	0
		95	0	0	8,600	15,000	0	65	544	24,209	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	Total On- and Off-site Releases
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	
59-89-2	N-Nitrosomorpholine	97	No reports received							
		96	1	0	0	0	0	0	0	
		95	1	0	0	0	0	0	0	
		88	No reports received							
99-55-8	5-Nitro-o-toluidine	97	4	20	0	0	0	20	50	70
		96	4	10	0	0	0	10	30	40
		95	3	5	0	0	0	5	30	35
		88	NR	NR	NR	NR	NR	NR	NR	NR
27314-13-2 *	Norflurazon	97	2	7	0	0	0	7	43,000	43,007
		96	2	8	0	0	0	8	40,000	40,008
		95	2	5	0	0	0	5	54,000	54,005
		88	NR	NR	NR	NR	NR	NR	NR	NR
19044-88-3 *	Oryzalin	97	3	10	0	0	0	10	0	10
		96	2	5	0	0	0	5	0	5
		95	2	5	0	0	0	5	0	5
		88	NR	NR	NR	NR	NR	NR	NR	NR
301-12-2 *	Oxydemeton-methyl	97	1	0	0	0	0	0	0	0
		96	1	0	0	0	0	0	0	0
		95	1	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
19666-30-9 *	Oxydiazon	97	5	1,200	0	0	0	1,200	0	1,200
		96	3	441	0	0	0	441	0	441
		95	3	665	0	0	0	665	0	665
		88	NR	NR	NR	NR	NR	NR	NR	NR
42874-03-3 *	Oxyfluorfen	97	3	86	0	0	0	86	1,308	1,394
		96	3	0	0	0	0	0	0	0
		95	2	87	3	0	0	90	0	90
		88	NR	NR	NR	NR	NR	NR	NR	NR
10028-15-6	Ozone	97	39	776,231	0	0	0	776,231	0	776,231
		96	33	632,989	0	0	0	632,989	0	632,989
		95	29	571,182	0	0	0	571,182	0	571,182
		88	NR	NR	NR	NR	NR	NR	NR	NR
123-63-7	Paraldehyde	97	3	35	0	0	0	35	0	35
		96	3	35	0	0	0	35	0	35
		95	2	33	0	0	0	33	0	33
		88	NR	NR	NR	NR	NR	NR	NR	NR

**Note: On-site Releases** from Section 5 of Form R. **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R. **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



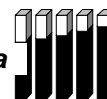


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
59-89-2	N-Nitroso-morpholine	97	No reports received								
		96	0	0	0	0	0	24,000	0	24,000	0
		95	0	0	0	0	0	0	0	0	0
		88	No reports received								
99-55-8	5-Nitro-o-toluidine	97	0	0	0	0	0	0	70	70	0
		96	0	0	0	0	0	0	40	40	0
		95	0	0	0	0	0	0	35	35	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
27314-13-2 *	Norflurazon	97	0	0	0	0	0	45,000	7	45,007	0
		96	0	0	0	0	0	1,000	40,008	41,008	0
		95	0	0	0	0	0	1,000	54,010	55,010	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
19044-88-3 *	Oryzalin	97	0	0	0	0	0	63,000	5	63,005	0
		96	0	0	0	0	0	52,000	3	52,003	0
		95	0	0	0	0	0	40,000	2	40,002	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
301-12-2 *	Oxydemeton-methyl	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
19666-30-9 *	Oxydiazon	97	18,000	0	0	0	4,000	305	949	23,254	0
		96	13,404	0	0	0	2,600	140	561	16,705	0
		95	3,012	0	0	0	2,400	100	611	6,123	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
42874-03-3 *	Oxyfluorfen	97	0	0	0	0	130	23,975	1,386	25,491	0
		96	0	0	0	0	0	20,181	0	20,181	0
		95	0	0	0	0	130	15,093	90	15,313	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
10028-15-6	Ozone	97	0	0	52,682	0	2,819,881	0	775,393	3,647,956	0
		96	0	0	15,495	0	2,250,019	0	617,890	2,883,404	0
		95	0	0	0	0	2,402,564	0	569,989	2,972,553	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
123-63-7	Paraldehyde	97	0	0	24,426	10	250,028	0	35	274,499	0
		96	0	0	48,566	5	230,000	0	35	278,606	0
		95	0	0	47,460	11	250,000	0	33	297,504	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
1910-42-5 *	Paraquat-dichloride	97	3	500	0	0	0	500	0	500
		96	4	1,000	0	0	0	1,000	5	1,005
		95	4	1,000	0	0	0	1,000	0	1,000
		88	NR	NR	NR	NR	NR	NR	NR	NR
56-38-2 *	Parathion	97	1	0	0	0	0	0	0	0
		96	2	0	0	0	0	0	0	0
		95	2	0	0	0	0	0	0	0
		88	13	3,265	750	0	250	4,265	3,959	8,224
1114-71-2 *	Pebulate	97	2	523	4	0	0	527	529	1,056
		96	1	500	0	0	0	500	500	1,000
		95	2	507	122	0	0	629	811	1,440
		88	NR	NR	NR	NR	NR	NR	NR	NR
40487-42-1 *	Pendimethalin	97	5	2,520	42	0	5	2,567	1,942	4,509
		96	6	2,230	22	0	890	3,142	0	3,142
		95	5	1,250	250	0	500	2,000	0	2,000
		88	NR	NR	NR	NR	NR	NR	NR	NR
76-01-7 *	Pentachloroethane	97	5	2,392	11	0	0	2,403	0	2,403
		96	6	1,652	22	0	0	1,674	0	1,674
		95	4	1,534	22	0	0	1,556	0	1,556
		88	NR	NR	NR	NR	NR	NR	NR	NR
87-86-5 *	Pentachlorophenol	97	36	7,048	952	0	33,297	41,297	66,982	108,279
		96	38	11,190	8,236	0	3,000	22,426	196,075	218,501
		95	37	6,266	3,146	0	250	9,662	23,942	33,604
		88	55	14,029	2,465	20,000	3,717	40,211	518,105	558,316
57-33-0	Pentobarbital sodium	97	1	0	0	0	0	0	0	0
		96	No reports received							
		95	No reports received							
		88	NR	NR	NR	NR	NR	NR	NR	NR
79-21-0 *	Peracetic acid	97	21	6,362	10	0	987	7,359	0	7,359
		96	19	11,555	5	0	812	12,372	0	12,372
		95	24	7,847	15	0	1,144	9,006	0	9,006
		88	8	5,453	55	0	0	5,508	0	5,508
594-42-3 *	Perchloromethyl mercaptan	97	3	516	0	0	0	516	0	516
		96	3	564	0	0	0	564	0	564
		95	2	541	0	0	0	541	0	541
		88	NR	NR	NR	NR	NR	NR	NR	NR

**Note: On-site Releases** from Section 5 of Form R. **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R. **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds	
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds				
1910-42-5 *	Paraquat-dichloride	97	0	0	0	0	0	106	41	147	0	
		96	23	100	0	0	0	114	189	426	0	
		95	68	0	0	0	0	170	206	444	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
56-38-2 *	Parathion	97	0	0	0	0	0	0	0	0	0	
		96	0	0	0	0	0	0	0	0	0	
		95	0	0	0	0	0	0	0	0	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1114-71-2 *	Pebulate	97	0	0	0	0	140	1,439	1,535	3,114	0	
		96	0	0	0	0	0	0	820	820	0	
		95	0	0	0	0	600	4,600	270	5,470	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
40487-42-1 *	Pendimethalin	97	2,000	0	0	0	160,000	27,000	4,740	193,740	0	
		96	600	0	0	0	150,000	6,304	3,234	160,138	140	
		95	300	0	0	0	190,000	6,774	1,498	198,572	56	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
76-01-7 *	Pentachloroethane	97	240,000	0	180,000	0	5,666,697	69,291	2,403	6,158,391	5	
		96	4,150,000	0	390,000	12,300	6,531,742	207,994	1,673	11,293,709	0	
		95	0	0	220,000	0	5,972,374	75,431	1,552	6,269,357	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
87-86-5 *	Pentachlorophenol	97	1,282,753	0	0	7,282	10,928	112,876	31,703	1,445,542	82,213	
		96	1,232,515	3,011	11,754	10,794	22,743	109,574	161,004	1,551,395	35,148	
		95	1,888,603	334	9,151	14,951	6,780	87,462	25,614	2,032,895	7	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
57-33-0	Pentobarbital sodium	97	0	0	0	0	0	0	0	0	0	
		96	No reports received									
		95	No reports received									
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
79-21-0 *	Peracetic acid	97	0	0	0	0	31,858	7,372	7,345	46,575	0	
		96	0	0	0	0	4,160	9,964	12,166	26,290	0	
		95	13,833	0	0	0	12,884	12,396	8,889	48,002	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
594-42-3 *	Perchloromethyl mercaptan	97	0	0	0	0	86,690	8	508	87,206	0	
		96	0	0	0	0	98,690	1	555	99,246	0	
		95	0	0	0	0	540	0	541	1,081	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	On-site Releases						Off-site Releases		Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
52645-53-1 *	Permethrin	97	18	4,607	14	0	0	4,621	1,019	5,640	
		96	13	1,495	0	0	0	1,495	1,250	2,745	
		95	13	1,299	37	0	250	1,586	751	2,337	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
85-01-8	Phenanthrene	97	53	124,720	174	0	36,048	160,942	152,638	313,580	
		96	48	128,312	103	0	6,316	134,731	89,038	223,769	
		95	34	72,383	19	0	4,008	76,410	72,491	148,901	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
108-95-2 *	Phenol	97	763	8,697,953	54,206	1,539,987	231,381	10,523,527	1,223,376	11,746,903	
		96	759	9,567,264	72,808	2,045,370	198,748	11,884,190	1,050,638	12,934,828	
		95	753	9,315,425	70,291	3,823,235	171,609	13,380,560	1,279,982	14,660,542	
		88	635	10,712,736	259,230	4,661,319	1,882,485	17,515,770	2,536,030	20,051,800	
26002-80-2 *	Phenothrin	97	2	0	0	0	0	0	0	0	
		96	1	0	0	0	0	0	0	0	
		95	1	0	0	0	0	0	0	0	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
95-54-5	1,2-Phenylene-diamine	97	7	514	3,900	0	7,568	11,982	3	11,985	
		96	7	516	3,000	0	26,940	30,456	8	30,464	
		95	7	962	41,100	0	2,176	44,238	31	44,269	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
108-45-2	1,3-Phenylene-diamine	97	21	6,972	104,122	0	65,737	176,831	18,151	194,982	
		96	18	2,718	128,739	0	37,508	168,965	633	169,598	
		95	17	6,621	43,343	0	63,153	113,117	80	113,197	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
106-50-3	p-Phenylene-diamine	97	10	3,509	504	0	2,064	6,077	6,930	13,007	
		96	9	3,980	409	0	1,308	5,697	0	5,697	
		95	10	4,440	856	0	653	5,949	0	5,949	
		88	13	113,890	826	4,716	0	119,432	64,452	183,884	
90-43-7 *	2-Phenylphenol	97	15	374	1	0	250	625	1,131	1,756	
		96	14	4,107	1	0	250	4,358	1,789	6,147	
		95	17	27,063	10	0	5	27,078	5,656	32,734	
		88	15	10,630	480	0	0	11,110	250	11,360	
57-41-0	Phenytoin	97	1	1	0	0	0	1	12,420	12,421	
		96	1	0	0	0	0	0	12,800	12,800	
		95	1	0	0	0	0	0	19,300	19,300	
		88	NR	NR	NR	NR	NR	NR	NR	NR	

Note: On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

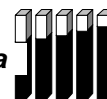


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
52645-53-1 *	Permethrin	97	0	0	0	0	292	9,905	6,263	16,460	0
		96	0	0	0	0	177	1,731	2,013	3,921	0
		95	0	0	0	5	651	665	543	1,864	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
85-01-8	Phenanthrene	97	266,859	21,574	97,469	108,549	641,029	121,866	329,099	1,586,445	124,890
		96	358,644	6,724	611,002	192,492	746,789	123,099	346,079	2,384,829	126,195
		95	162,334	1,190	35,001	197,312	1,107,863	2,410	151,354	1,657,464	42,526
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
108-95-2 *	Phenol	97	48,295,915	113,268	27,801,431	3,364,888	25,562,763	6,277,195	11,471,816	122,887,276	8,962
		96	40,787,212	80,035	27,466,637	3,633,671	25,549,644	6,910,770	12,806,156	117,234,125	4,338
		95	41,534,425	549,568	28,575,114	3,685,797	35,004,372	6,375,434	14,448,344	130,173,054	72,165
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
26002-80-2 *	Phenothrin	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
95-54-5	1,2-Phenylene-diamine	97	0	0	0	0	155,100	17,073	11,985	184,158	0
		96	0	0	0	0	136,000	945	30,464	167,409	0
		95	0	0	0	0	499,896	7,316	44,037	551,249	320
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
108-45-2	1,3-Phenylene-diamine	97	720	0	0	1,384	1,025,440	553,136	190,560	1,771,240	0
		96	1,200	0	0	1,614	1,162,215	147,216	181,585	1,493,830	0
		95	0	0	0	493	617,879	134,176	112,936	865,484	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
106-50-3	p-Phenylene-diamine	97	0	0	0	0	331,074	31,958	6,517	369,549	1
		96	0	0	0	0	303,611	29,861	6,017	339,489	0
		95	0	0	0	0	364,868	20,082	5,757	390,707	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
90-43-7 *	2-Phenylphenol	97	0	0	229	0	137,977	816	1,407	140,429	0
		96	0	0	92	0	705,215	22,717	4,873	732,897	0
		95	0	0	530	0	1,027,544	2,065	32,590	1,062,729	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
57-41-0	Phenytoin	97	0	0	0	0	180	950	13,000	14,130	0
		96	0	0	0	0	0	50	13,000	13,050	0
		95	0	0	0	0	0	0	19,000	19,000	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	On-site Releases						Off-site Releases		Total On-site and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
75-44-5	Phosgene	97	31	21,877	0	0	3	21,880	0	21,880	
		96	30	16,283	0	5	0	16,288	0	16,288	
		95	29	15,894	0	5	0	15,899	0	15,899	
		88	37	21,603	500	250	0	22,353	480	22,833	
7803-51-2 *	Phosphine	97	6	20,562	0	0	365	20,927	0	20,927	
		96	6	20,381	0	0	643	21,024	0	21,024	
		95	3	1,491	0	0	0	1,491	0	1,491	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
7664-38-2 *	Phosphoric acid	97	2,736	1,801,585	43,514,457	13,257	30,227,548	75,556,847	2,734,781	78,291,628	
		96	2,729	1,064,714	28,367,983	9,716	31,997,421	61,439,834	2,338,370	63,778,204	
		95	2,796	1,254,896	20,402,951	7,340	35,926,629	57,591,816	2,066,261	59,658,077	
		88	2,535	1,963,741	122,647,164	53,711	52,615,971	177,280,587	5,303,543	182,584,130	
7723-14-0 *	Phosphorus (yellow or white)	97	55	20,970	3,859	0	2,581,846	2,606,675	6,291	2,612,966	
		96	50	25,936	3,767	0	2,057,524	2,087,227	21,839	2,109,066	
		95	53	28,621	3,661	0	1,871,801	1,904,083	23,650	1,927,733	
		88	73	20,608	11,322	0	3,893,674	3,925,604	195,013	4,120,617	
85-44-9	Phthalic anhydride	97	161	398,498	183	0	0	398,681	2,948,099	3,346,780	
		96	175	427,832	174	0	0	428,006	103,707	531,713	
		95	184	604,932	711	0	674	606,317	76,916	683,233	
		88	180	549,909	1,040	0	1,265	552,214	3,976,682	4,528,896	
1918-02-1 *	Picloram	97	2	2,900	0	0	0	2,900	0	2,900	
		96	2	522	0	0	0	522	0	522	
		95	2	220	1	0	0	221	0	221	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
88-89-1	Picric acid	97	9	0	0	110,875	0	110,875	0	110,875	
		96	9	0	0	94,031	0	94,031	0	94,031	
		95	9	221	0	49,256	0	49,477	0	49,477	
		88	5	252	251	1,362,180	250	1,362,933	0	1,362,933	
51-03-6 *	Piperonyl butoxide	97	8	251	0	0	0	251	0	251	
		96	11	513	14	0	0	527	0	527	
		95	12	775	0	0	0	775	750	1,525	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
--	Polybrominated biphenyls	97	3	0	0	0	0	0	0	0	
		96	4	250	0	0	0	250	375	625	
		95	2	0	0	0	0	0	0	0	
		88	1	250	0	0	0	250	0	250	

Note: On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

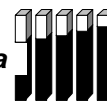


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
75-44-5	Phosgene	97	304	0	9	0	13,946,068	892	21,831	13,969,104	29
		96	0	0	200	0	17,249,349	2,270	16,230	17,268,049	15
		95	0	0	430,034	0	15,138,316	2,414	15,867	15,586,631	7
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7803-51-2 *	Phosphine	97	0	365	0	0	350,000	0	20,523	370,888	30
		96	0	0	0	0	350,643	0	20,379	371,022	59
		95	0	0	0	0	0	0	2,491	2,491	10
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7664-38-2 *	Phosphoric acid	97	453,512,929	4,387,637	2,000	65,620	128,525,343	5,572,441	69,947,907	662,013,877	7,162,494
		96	310,993,398	8,774,442	8,300	71,813	119,723,686	4,359,331	62,809,373	506,740,343	356,546
			216,200,620	11,790,111	14,792	56,635	355,091,742	5,367,571	55,585,797	644,107,267	3,978,666
		95		0							
88	NA	NA	NA	NA	NA	NA	NA	NA	NA		
7723-14-0 *	Phosphorus (yellow or white)	97	0	238,971	0	0	694,999	13,268	2,612,061	3,559,299	31,014
		96	300	133,405	0	0	610,526	21,043	2,104,674	2,869,948	16,163
		95	1,091	26,089	0	0	5,052	147,342	1,929,173	2,108,747	1,077
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
85-44-9	Phthalic anhydride	97	301,472	1,456	2,488,912	2,489,429	19,170,287	214,019	537,135	25,202,710	4,606
		96	90,881	1,392	2,098,212	2,520,967	12,577,144	2,757,815	493,045	20,539,456	67,400
		95	421,574	1,317	2,420,922	4,951,573	18,689,501	444,206	670,300	27,599,393	26,158
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1918-02-1 *	Picloram	97	0	0	0	0	70,488	0	2,900	73,388	0
		96	0	0	0	0	26,464	0	522	26,986	0
		95	0	0	0	0	23,208	0	221	23,429	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
88-89-1	Picric acid	97	0	0	183,393	56,831	1,354,964	1	110,875	1,706,064	0
		96	0	0	136,931	0	1,779,450	21,015	94,031	2,031,427	0
		95	0	0	53,393	2	1,261,618	0	49,477	1,364,490	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
51-03-6 *	Piperonyl butoxide	97	0	0	0	0	0	4,700	157	4,857	0
		96	0	0	0	0	9	5,119	527	5,655	0
		95	0	0	0	5	0	16,290	1,099	17,394	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Polybrominated biphenyls	97	0	5,071	0	0	0	0	549	5,620	0
		96	0	4,219	0	0	0	0	505	4,724	0
		95	0	2,720	0	0	0	0	0	2,720	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
--	Polychlorinated alkanes	97	67	24,888	5,830	0	0	30,718	34,585	65,303
		96	71	2,787	8,372	0	687	11,846	89,143	100,989
		95	67	20,945	6,206	0	0	27,151	119,580	146,731
		88	NR	NR	NR	NR	NR	NR	NR	NR
1336-36-3 *	Polychlorinated biphenyls (PCBs)	97	6	0	0	0	6,794	6,794	980,846	987,640
		96	6	255	0	0	9,205	9,460	51,086	60,546
		95	9	0	0	0	0	0	34,432	34,432
		88	121	6	10	0	752	768	488,732	489,500
--	Polycyclic aromatic compounds	97	159	495,236	1,652	0	14,907	511,795	1,394,568	1,906,363
		96	148	462,901	8,184	0	14,459	485,544	1,248,088	1,733,632
		95	146	425,730	4,995	0	32,887	463,612	1,219,471	1,683,083
		88	NR	NR	NR	NR	NR	NR	NR	NR
7758-01-2	Potassium bromate	97	3	255	0	0	0	255	0	255
		96	2	5	0	0	0	5	0	5
		95	1	5	0	0	0	5	0	5
		88	NR	NR	NR	NR	NR	NR	NR	NR
128-03-0 *	Potassium-dimethyldithio-carbamate	97	19	510	750	0	5	1,265	0	1,265
		96	17	180	0	0	0	180	0	180
		95	10	206	5	0	0	211	0	211
		88	NR	NR	NR	NR	NR	NR	NR	NR
137-41-7 *	Potassium-N-methyldithio-carbamate	97	7	0	0	0	0	0	0	0
		96	4	0	0	0	0	0	0	0
		95	3	35	0	0	0	35	0	35
		88	NR	NR	NR	NR	NR	NR	NR	NR
41198-08-7 *	Profenofos	97	1	0	0	0	0	0	0	0
		96	2	0	0	0	0	0	0	0
		95	1	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
7287-19-6 *	Prometryn	97	6	933	37	0	0	970	250	1,220
		96	8	1,298	27	0	0	1,325	500	1,825
		95	6	1,481	159	0	0	1,640	890	2,530
		88	NR	NR	NR	NR	NR	NR	NR	NR
23950-58-5 *	Pronamide	97	2	255	0	0	0	255	0	255
		96	1	255	0	0	0	255	0	255
		95	1	255	0	0	0	255	0	255
		88	NR	NR	NR	NR	NR	NR	NR	NR

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



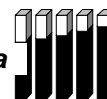


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
--	Polychlorinated alkanes	97	3,183	405,065	55,000	93,658	7,650	463,245	137,965	1,165,766	2,320
		96	17,136	247,793	69,000	229,886	228,286	446,346	119,819	1,358,266	0
		95	79,803	175,674	0	135,332	313,520	478,797	161,681	1,344,807	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1336-36-3 *	Polychlorinated biphenyls (PCBs)	97	0	1,400	0	0	0	62,928	8,994	73,322	981,191
		96	0	0	0	241	0	38,521	13,475	52,237	311,702
		95	0	0	0	0	0	64,494	8,242	72,736	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Polycyclic aromatic compounds	97	1,335,135	599,044	7,624,658	56,921	1,147,152	13,441	1,881,453	12,657,804	9,078
		96	1,135,404	8,743,681	16,190,102	73,443	2,848,079	24,186	1,741,793	30,756,688	16,412
		95	1,472,268	8,515,771	10,281,825	58,948	1,471,546	6,061	1,719,901	23,526,320	22,295
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7758-01-2	Potassium bromate	97	0	0	53,129	2	0	0	455	53,586	0
		96	0	0	0	0	0	0	8	8	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
128-03-0 *	Potassium-dimethyldithio-carbamate	97	0	33,700	0	1	0	132,277	793	166,771	0
		96	0	39,900	0	0	0	148,676	180	188,756	0
		95	0	0	0	0	11,000	161,362	211	172,573	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
137-41-7 *	Potassium-N-methyldithio-carbamate	97	0	0	0	0	10,500	0	0	10,500	0
		96	0	0	0	0	0	43	0	43	0
		95	0	0	0	0	0	0	35	35	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
41198-08-7 *	Profenofos	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	109	0	0	109	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7287-19-6 *	Prometryn	97	0	0	0	0	161	816	832	1,809	0
		96	0	0	0	0	827	57,735	2,074	60,636	0
		95	0	0	0	1	1,314	7,603	4,028	12,946	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
23950-58-5 *	Pronamide	97	5,400	0	0	0	0	2,466	250	8,116	0
		96	8,800	0	0	0	0	650	220	9,670	0
		95	3,700	0	0	0	0	1,200	260	5,160	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases		Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
1918-16-7 *	Propachlor	97	4	50	0	0	0	50	13,000	13,050	
		96	4	250	0	0	0	250	1,200	1,450	
		95	4	331	0	0	0	331	777	1,108	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
1120-71-4	Propane sultone	97	1	0	0	0	0	0	0	0	
		96	1	0	0	0	0	0	0	0	
		95	1	0	0	0	0	0	0	0	
		88	2	0	0	0	0	0	0	0	
709-98-8 *	Propanil	97	3	2,155	750	0	0	2,905	500	3,405	
		96	3	3,377	250	0	0	3,627	0	3,627	
		95	4	2,357	250	0	0	2,607	3,723	6,330	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
2312-35-8 *	Propargite	97	3	260	0	0	0	260	0	260	
		96	2	260	0	0	0	260	0	260	
		95	1	10	0	0	0	10	0	10	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
107-19-7 *	Propargyl alcohol	97	17	6,342	600	237,098	0	244,040	866	244,906	
		96	14	9,278	0	285,166	0	294,444	576	295,020	
		95	11	9,885	0	290,680	0	300,565	936	301,501	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
31218-83-4 *	Propetamphos	97	No reports received								
		96	1	10	0	0	250	260	1,000	1,260	
		95	1	500	0	0	0	500	750	1,250	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
60207-90-1 *	Propiconazole	97	7	153	0	0	0	153	0	153	
		96	5	10	0	0	0	10	1,332	1,342	
		95	3	0	0	0	0	0	0	0	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
123-38-6 *	Propionaldehyde	97	21	165,862	39,054	97,161	0	302,077	43	302,120	
		96	24	171,008	32,077	74,613	0	277,698	62	277,760	
		95	22	213,198	27,012	101,432	0	341,642	0	341,642	
		88	15	1,267,839	1,156	930	0	1,269,925	0	1,269,925	
114-26-1 *	Propoxur	97	1	0	0	0	0	0	0	0	
		96	1	0	0	0	0	0	0	0	
		95	5	5	0	0	0	5	0	5	
		88	5	250	0	0	0	250	250	500	

**Note: On-site Releases** from Section 5 of Form R. **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R. **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

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Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
1918-16-7 *	Propachlor	97	0	0	0	0	0	74,400	50	74,450	0
		96	0	0	0	0	0	8,500	1,400	9,900	0
		95	0	0	0	0	0	7,270	1,237	8,507	14,000
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1120-71-4	Propane sultone	97	0	0	0	0	4,900	120	0	5,020	0
		96	0	0	0	0	4	0	0	4	0
		95	0	0	0	0	16	0	0	16	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
709-98-8 *	Propanil	97	0	0	0	0	37	7,200	3,230	10,467	250
		96	0	0	0	0	0	1,494	2,987	4,481	30
		95	0	0	0	0	0	402	4,468	4,870	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
2312-35-8 *	Propargite	97	0	0	0	3,164	0	4,959	85	8,208	0
		96	0	0	0	3,808	0	12,075	10	15,893	0
		95	0	0	0	544	0	3,723	10	4,277	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
107-19-7 *	Propargyl alcohol	97	9	0	269,073	481,890	116,170	28,401	248,946	1,144,489	0
		96	5	0	211,906	289,857	333,890	38,572	294,676	1,168,906	0
		95	0	0	198,867	344,704	56,027	78,003	301,062	978,663	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
31218-83-4 *	Propetamphos	97	No reports received								
		96	0	0	0	0	0	0	1,032	1,032	0
		95	0	0	0	0	0	0	1,067	1,067	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
60207-90-1 *	Propiconazole	97	0	0	0	0	0	30,493	2,054	32,547	0
		96	0	0	0	0	0	1,719	1,336	3,055	0
		95	0	0	0	0	0	1,026	0	1,026	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
123-38-6 *	Propionaldehyde	97	66,000	0	1,146,337	11,939	4,486,626	168,603	302,267	6,181,772	22
		96	0	0	255,989	18,128	4,446,808	320,752	278,078	5,319,755	0
		95	0	0	898,697	5,565	2,348,789	78,067	337,157	3,668,275	23
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
114-26-1 *	Propoxur	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	1,081	4	1,085	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	
115-07-1	Propylene	97	357	16,285,889	5,198	2,632	670	16,294,389	130	16,294,519
		96	352	26,462,498	7,133	0	2,458	26,472,089	2,181	26,474,270
		95	347	27,429,070	4,047	0	169	27,433,286	298	27,433,584
		88	334	32,200,231	10,003	0	0	32,210,234	3,320	32,213,554
75-55-8	Propyleneimine	97	5	230	0	0	0	230	0	230
		96	6	402	0	0	0	402	0	402
		95	7	600	0	0	0	600	0	600
		88	1	500	0	0	0	500	0	500
75-56-9 *	Propylene oxide	97	120	543,603	22,961	11,700	887	579,151	29,904	609,055
		96	121	583,648	45,393	12,141	335	641,517	39,230	680,747
		95	133	844,402	29,934	22,577	4,403	901,316	8,633	909,949
		88	128	3,680,215	112,503	1,113,780	11,630	4,918,128	16,626	4,934,754
110-86-1 *	Pyridine	97	43	105,037	545	612,968	4	718,554	38,319	756,873
		96	40	91,982	908	428,000	1	520,891	775	521,666
		95	40	100,190	830	453,900	4	554,924	321	555,245
		88	31	251,799	2,158	491,775	1,125	746,857	40,699	787,556
91-22-5	Quinoline	97	24	20,002	25	27,000	305	47,332	11,582	58,914
		96	26	23,007	20	32,000	466	55,493	5,072	60,565
		95	23	11,412	20	13,000	405	24,837	3,744	28,581
		88	34	49,350	502	0	896	50,748	6,242	56,990
106-51-4 *	Quinone	97	5	4,801	350	0	0	5,151	0	5,151
		96	5	7,105	500	0	0	7,605	0	7,605
		95	4	7,101	1,500	0	0	8,601	0	8,601
		88	5	11,300	140	0	0	11,440	0	11,440
82-68-8 *	Quintozene	97	17	978	0	0	0	978	364	1,342
		96	14	2,611	0	0	836	3,447	0	3,447
		95	10	1,424	0	0	800	2,224	192	2,416
		88	6	1,064	0	0	0	1,064	12,625	13,689
76578-14-8 *	Quizalofop-ethyl	97	2	0	0	0	0	0	0	0
		96	2	1	0	0	0	1	0	1
		95	2	6	0	0	0	6	0	6
		88	NR	NR	NR	NR	NR	NR	NR	NR
10453-86-8 *	Resmethrin	97	2	1	0	0	0	1	0	1
		96	3	1	0	0	0	1	0	1
		95	2	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

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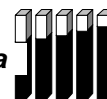


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
115-07-1	Propylene <sup>c</sup>	97	65,774,345	35	718,371,130	2,068	297,708,572	125,675	15,905,795	1,097,887,620	955,453
		96	60,407,279	13	567,598,551	215,250	306,994,680	278,482	26,490,625	961,984,880	581,893
		95	6,713,304	0	476,153,246	3,132,285	253,061,345	80,239	26,761,734	765,902,153	992,835
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-55-8	Propyleneimine	97	0	0	0	0	4,000	0	230	4,230	0
		96	0	0	0	0	1,734	0	402	2,136	0
		95	0	0	0	0	1,433	0	600	2,033	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-56-9 *	Propylene oxide	97	1,475,188	0	13,432,224	81,598	13,013,027	624,849	625,866	29,252,752	3,929
		96	3,780,004	4	18,451,504	246,613	13,281,899	207,871	878,087	36,845,982	9,074
		95	3,091	0	17,981,778	281,155	14,366,911	191,603	1,142,052	33,966,590	20,197
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
110-86-1 *	Pyridine	97	4,319,946	10,343	2,371,309	101,071	1,104,973	740,334	699,798	9,347,774	1,580
		96	7,426,653	31,550	1,278,558	260,311	886,200	605,897	521,424	11,010,593	1,938
		95	5,974,830	14,008	1,713,719	186,855	348,352	483,295	552,288	9,273,347	1,074
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
91-22-5	Quinoline	97	21,380	880	122,120	2,541	114,609	210	61,015	322,755	2
		96	15,881	2,180	34,656	34,607	90,969	17,039	59,957	255,289	100
		95	1,750	2,243	302,003	22	222,705	16,120	27,181	572,024	252
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
106-51-4 *	Quinone	97	0	0	190,238	0	365,345	20,662	5,101	581,346	0
		96	0	0	230,508	0	366,115	50,513	7,605	654,741	0
		95	0	0	179,870	1,328	130,500	30,173	8,601	350,472	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
82-68-8 *	Quintozene	97	2,573	0	0	417,048	0	24,119	1,838	445,578	0
		96	884	0	0	221,410	0	398,381	3,535	624,210	0
		95	863	0	0	0	0	759,587	2,251	762,701	110
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
76578-14-8 *	Quizalofop-ethyl	97	0	0	0	0	0	0	1	1	0
		96	0	0	0	0	0	0	1	1	0
		95	0	0	0	0	0	0	5	5	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
10453-86-8 *	Resmethrin	97	0	0	0	0	0	400	0	400	0
		96	0	0	0	0	0	600	1	601	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

<sup>c</sup>One facility, TPI Petroleum in Ardmore, OK, reported on-site energy recovery for propylene of 12,900,000 pounds in 1995, 16,300,000 pounds in 1996, and 272,000,000 pounds in 1997. The facility has since revised these quantities to zero. These revisions change on-site energy recovery for propylene to 463,253,246 pounds in 1995, to 551,298,551 pounds in 1996, and to 446,371,130 pounds in 1997. Total production-related waste managed for propylene changes to 753,002,153 pounds in 1995, to 945,684,880 pounds in 1996, and to 825,887,620 pounds in 1997.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	Total On-site and Off-site Releases Pounds	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
81-07-2	Saccharin (manufacturing)	97	2	171	0	0	0	171	1,400	1,571	
		96	1	243	0	0	0	243	1,200	1,443	
		95	1	99	0	0	0	99	1,500	1,599	
		88	4	750	0	0	0	750	750	1,500	
94-59-7 *	Safrole	97	2	505	0	0	0	505	0	505	
		96	2	505	0	0	0	505	0	505	
		95	1	255	0	0	0	255	0	255	
		88	2	500	0	0	0	500	0	500	
7782-49-2 *	Selenium	97	16	290	58	0	585	933	6,767	7,700	
		96	12	45	97	0	29	171	7,458	7,629	
		95	15	1,450	92	0	23	1,565	3,501	5,066	
		88	24	16,282	1,168	0	127,508	144,958	4,367	149,325	
--	Selenium compounds	97	43	82,857	2,374	3,409	317,509	406,149	29,029	435,178	
		96	38	47,264	2,404	3,100	233,517	286,285	75,633	361,918	
		95	40	61,946	2,184	3,640	264,759	332,529	108,874	441,403	
		88	18	14,506	250	3,400	45,750	63,906	63,226	127,132	
74051-80-2 *	Sethoxydim	97	3	0	0	0	0	0	0	0	
		96	1	0	0	0	0	0	0	0	
		95	No reports received						0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
7440-22-4 *	Silver	97	77	7,629	143	0	586	8,358	40,221	48,579	
		96	76	8,212	149	0	6,306	14,667	24,266	38,933	
		95	74	9,297	161	0	250	9,708	14,871	24,579	
		88	72	47,988	1,654	0	39,510	89,152	8,482	97,634	
--	Silver compounds	97	64	7,918	6,109	156	40,405	54,588	52,481	107,069	
		96	64	15,513	8,147	370	45,693	69,723	15,574	85,297	
		95	59	15,582	6,284	380	35,325	57,571	7,545	65,116	
		88	46	15,406	8,684	250	11,550	35,890	15,803	51,693	
122-34-9 *	Simazine	97	8	2,939	348	0	0	3,287	48,629	51,916	
		96	5	4,591	93	0	0	4,684	54,457	59,141	
		95	7	4,990	232	0	5	5,227	26,231	31,458	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
26628-22-8 *	Sodium azide	97	12	24,417	5	0	156	24,578	28,909	53,487	
		96	14	21,313	268	0	116	21,697	133,449	155,146	
		95	14	35,575	200	0	255	36,030	133,837	169,867	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

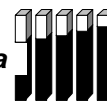


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds	
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds				
81-07-2	Saccharin (manufacturing)	97	0	0	0	0	10,000	10	1,600	11,610	0	
		96	0	0	0	0	12,000	12	1,500	13,512	0	
		95	0	0	0	0	9,700	10	1,600	11,310	74	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
94-59-7 *	Safrole	97	0	0	0	0	1	25	100	126	0	
		96	0	0	0	0	4	130	100	234	0	
		95	0	0	0	0	1	5	0	6	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7782-49-2 *	Selenium	97	9,720	0	74,135	582	0	1,001	6,491	91,929	0	
		96	0	0	0	460	29	6,700	6,910	14,099	0	
		95	1,604	4,604	0	0	23	2,271	1,524	10,026	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Selenium compounds	97	772,808	9,693	0	0	1	9,628	343,984	1,136,114	104,800	
		96	601,563	2,841	0	4,700	0	32,030	343,931	985,065	2,332	
		95	590,805	158,278	0	10	2	48,520	355,030	1,152,645	49,259	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
74051-80-2 *	Sethoxydim	97	0	0	0	0	0	0	0	0	0	
		96	0	0	0	0	0	0	0	0	0	
		95	No reports received									
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
7440-22-4 *	Silver	97	805,582	1,315,535	0	29	3,635	121	138,036	2,262,938	291	
		96	738,292	810,123	0	0	26,346	1,420	17,306	1,593,487	574	
		95	563,590	1,251,487	0	1	87,462	531	17,608	1,920,679	614	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Silver compounds	97	3,361,707	1,000,592	0	0	550,965	5,500	74,153	4,992,917	2,619	
		96	638,500	1,106,220	0	0	3,967,716	39,547	80,437	5,832,420	751	
		95	327,846	1,064,906	0	0	3,966,504	23,221	56,205	5,438,682	269	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
122-34-9 *	Simazine	97	50	0	0	0	77,000	12,480	9,372	98,902	0	
		96	0	0	0	0	32,000	201	57,070	89,271	0	
		95	0	0	0	0	150,000	24,000	4,970	178,970	0	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
26628-22-8 *	Sodium azide	97	48,963	773,161	0	0	75,278	1,109,199	41,281	2,047,882	106	
		96	91,031	1,603,566	0	0	78,892	2,222,671	156,664	4,152,824	81	
		95	190,310	556,000	0	0	93,341	3,906,934	166,060	4,912,645	110	
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
1982-69-0 *	Sodium dicamba	97	2	255	0	250	0	505	0	505
		96	2	755	0	0	0	755	0	755
		95	3	14,350	0	750	0	15,100	0	15,100
		88	NR	NR	NR	NR	NR	NR	NR	NR
128-04-1 *	Sodium dimethyldithio-carbamate	97	67	17,684	10	0	0	17,694	126,741	144,435
		96	58	2,834	10	0	0	2,844	121,595	124,439
		95	61	2,746	20	0	0	2,766	152,357	155,123
		88	NR	NR	NR	NR	NR	NR	NR	NR
7632-00-0 *	Sodium nitrite	97	372	254,878	481,319	747,000	192,355	1,675,552	793,104	2,468,656
		96	353	278,723	935,765	727,000	43,654	1,985,142	483,076	2,468,218
		95	318	301,410	546,683	964,500	81,948	1,894,541	288,424	2,182,965
		88	NR	NR	NR	NR	NR	NR	NR	NR
100-42-5	Styrene	97	1,507	44,126,665	43,954	202,387	537,050	44,910,056	1,583,171	46,493,227
		96	1,509	42,144,134	12,864	228,317	271,498	42,656,813	1,820,641	44,477,454
		95	1,546	41,264,916	4,570	209,945	147,921	41,627,352	2,715,709	44,343,061
		88	1,258	34,299,811	59,069	165	242,941	34,601,986	2,013,696	36,615,682
96-09-3	Styrene oxide	97	2	11	0	0	0	11	0	11
		96	5	31	0	0	0	31	0	31
		95	5	13	0	0	0	13	0	13
		88	6	2,314	0	0	0	2,314	750	3,064
7664-93-9 *	Sulfuric acid	97	894	21,259,394	24,447	113,255	46,421	21,443,517	668,139	22,111,656
		96	1,149	20,825,296	2,296	15,000	57,186	20,899,778	1,380,742	22,280,520
		95	1,570	20,688,128	5,363	30,035	133,212	20,856,738	3,943,359	24,800,097
		88	NR	NR	NR	NR	NR	NR	NR	NR
2699-79-8 *	Sulfuryl fluoride	97	3	428,000	0	0	0	428,000	0	428,000
		96	2	362,000	0	0	0	362,000	0	362,000
		95	2	355,007	0	0	0	355,007	0	355,007
		88	NR	NR	NR	NR	NR	NR	NR	NR
35400-43-2 *	Sulprofos	97	No reports received							
		96	1	0	0	0	0	0	0	0
		95	1	247	0	0	0	247	0	247
		88	NR	NR	NR	NR	NR	NR	NR	NR
34014-18-1 *	Tebuthiuron	97	2	10	0	0	0	10	0	10
		96	1	5	0	0	0	5	0	5
		95	1	5	0	0	0	5	0	5
		88	NR	NR	NR	NR	NR	NR	NR	NR

**Note: On-site Releases** from Section 5 of Form R. **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R. **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.





Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
1982-69-0 *	Sodium dicamba	97	0	0	0	0	0	4,200	505	4,705	0
		96	0	0	0	0	0	128	400	528	0
		95	0	0	0	0	0	800	15,200	16,000	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
128-04-1 *	Sodium dimethyldithio-carbamate	97	200	287,077	0	0	439,994	849,275	55,140	1,631,686	0
		96	200	1,791,502	0	0	400,906	619,333	31,656	2,843,597	194
		95	250	199,200	0	0	467,228	510,003	27,474	1,204,155	5,000
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7632-00-0 *	Sodium nitrite	97	501,890	36,851	0	61,249	14,773,132	3,439,826	2,192,274	21,005,222	65,876
		96	267,726	32,731	0	1	7,364,727	3,509,395	2,678,942	13,853,522	6,725
		95	374,426	23,857	0	0	7,259,547	2,773,201	2,784,301	13,215,332	270
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
100-42-5	Styrene	97	15,296,876	1,109,081	26,721,098	7,388,173	10,169,393	4,250,300	44,387,903	109,322,824	283,482
		96	19,920,222	1,185,613	21,544,059	8,304,980	15,032,191	3,127,875	43,181,843	112,296,783	98,031
		95	9,297,615	634,355	20,674,599	9,228,145	14,031,180	4,178,791	43,505,775	101,550,460	170,874
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
96-09-3	Styrene oxide	97	0	0	30,000	0	0	0	11	30,011	0
		96	0	0	35,337	861	0	0	32	36,230	0
		95	0	0	35,337	0	0	0	13	35,350	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7664-93-9 *	Sulfuric acid	97	245,755,305	2,206,540	940	20	186,759,219	2,867,753	21,847,891	459,437,668	12,115
		96	316,449,536	5,936,551	3,600	6,722	370,908,038	2,696,533	23,257,626	719,258,606	15,788
		95	686,586,380	5,723,070	66,777	24,524	635,030,218	11,581,301	22,132,658	1,361,144,928	85,935
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
2699-79-8 *	Sulfuryl fluoride	97	0	0	0	0	0	0	428,000	428,000	0
		96	0	0	0	0	0	0	362,000	362,000	0
		95	0	0	0	0	0	0	371,500	371,500	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
35400-43-2 *	Sulprofos	97	No reports received								
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	1,137	0	249	1,386	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
34014-18-1 *	Tebuthiuron	97	15	0	0	0	1,100	1,200	1	2,316	0
		96	1	0	0	0	1,000	1,000	1	2,002	0
		95	1	0	0	0	1,000	1,100	1	2,102	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
3383-96-8 *	Temephos	97	1	0	0	0	0	0	0	0
		96	1	0	0	0	0	0	0	0
		95	1	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
5902-51-2 *	Terbacil	97	2	0	10,318	0	0	10,318	0	10,318
		96	2	0	3,835	0	0	3,835	0	3,835
		95	2	0	4,608	0	0	4,608	0	4,608
		88	NR	NR	NR	NR	NR	NR	NR	NR
630-20-6	1,1,1,2-Tetra-chloroethane	97	8	4,938	0	0	0	4,938	2	4,940
		96	9	6,466	30	0	1	6,497	19	6,516
		95	7	6,026	0	0	0	6,026	2	6,028
		88	NR	NR	NR	NR	NR	NR	NR	NR
79-34-5 *	1,1,2,2-Tetra-chloroethane	97	14	13,614	0	0	0	13,614	511	14,125
		96	13	15,488	130	0	0	15,618	7	15,625
		95	16	8,275	2,222	0	0	10,497	7	10,504
		88	13	43,865	1,903	0	29	45,797	128,750	174,547
127-18-4 *	Tetrachloro-ethylene	97	372	6,885,068	2,282	15,118	5,074	6,907,542	24,753	6,932,295
		96	404	7,826,025	1,561	13,436	5,472	7,846,494	22,071	7,868,565
		95	436	9,608,666	2,407	20,481	6	9,631,560	72,961	9,704,521
		88	747	36,131,980	33,314	72,250	82,144	36,319,688	1,385,378	37,705,066
354-11-0	1,1,1,2-Tetra-chloro-2-fluoro-ethane	97	1	19,700	1	0	0	19,701	0	19,701
		96	No reports received							
		95	No reports received							
		88	NR	NR	NR	NR	NR	NR	NR	NR
354-14-3	1,1,2,2-Tetra-chloro-1-fluoro-ethane	97	No reports received							
		96	No reports received							
		95	1	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
961-11-5 *	Tetrachlorvinphos	97	4	365	5	0	0	370	3,760	4,130
		96	3	365	5	0	0	370	2,030	2,400
		95	4	626	5	0	0	631	4,200	4,831
		88	6	251	0	0	0	251	9,270	9,521
64-75-5 *	Tetracycline hydrochloride	97	3	474	0	0	0	474	1,735	2,209
		96	1	255	0	0	0	255	0	255
		95	2	754	0	0	0	754	112	866
		88	NR	NR	NR	NR	NR	NR	NR	NR

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
3383-96-8 *	Temephos	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
5902-51-2 *	Terbacil	97	0	0	0	0	2,793	33,665	10,318	46,776	0
		96	0	0	0	0	2,983	7,547	3,835	14,365	0
		95	0	0	0	0	5,070	7,558	4,608	17,236	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
630-20-6	1,1,1,2-Tetrachloroethane	97	2,100,000	0	0	301,000	2,933,725	62,211	4,936	5,401,872	0
		96	2,500,000	0	0	140,000	2,836,903	238,304	9,441	5,724,648	1
		95	2,600,000	0	0	0	3,986,000	379,203	7,356	6,972,559	40
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
79-34-5 *	1,1,2,2-Tetrachloroethane	97	4,908,000	2,458,805	2,416,000	0	7,744,618	135,714	13,545	17,676,682	14
		96	4,808,000	2,380,211	924,000	0	11,024,249	248,100	15,585	19,400,145	0
		95	6,200,000	2,233,342	846,600	880	13,754,898	150,324	10,503	23,196,547	40
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
127-18-4 *	Tetrachloroethylene	97	40,942,533	8,921,720	4,556,500	1,232,892	17,289,521	1,173,229	6,844,562	80,960,957	13,494
		96	46,896,883	5,966,695	2,647,705	780,979	20,678,019	1,627,880	7,679,803	86,277,964	14,464
		95	46,323,123	6,802,890	8,622,647	779,833	26,279,022	2,285,993	9,604,652	100,698,160	14,443
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
354-11-0	1,1,1,2-Tetrachloro-2-fluoroethane	97	6,100	1,820	0	0	0	10	19,700	27,630	0
		96	No reports received								
		95	No reports received								
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
354-14-3	1,1,2,2-Tetrachloro-1-fluoroethane	97	No reports received								
		96	No reports received								
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
961-11-5 *	Tetrachlorvinphos	97	345	0	35,000	49,500	850	0	3,862	89,557	0
		96	615	0	0	45,000	1,020	3,885	2,142	52,662	0
		95	330	0	0	47,000	1,020	4,244	4,394	56,988	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
64-75-5 *	Tetracycline hydrochloride	97	0	0	0	0	0	1,750	2,034	3,784	0
		96	0	0	0	0	0	400	50	450	0
		95	0	0	0	0	0	1,736	677	2,413	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases		Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
7696-12-0 *	Tetramethrin	97	2	0	0	0	0	0	0	0	0
		96	1	0	0	0	0	0	0	0	0
		95	2	0	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
7440-28-0	Thallium	97	3	256	0	0	1,000	1,256	1,500	2,756	
		96	No reports received								
		95	1	255	0	0	755	1,010	195	1,205	
		88	No reports received								
--	Thallium compounds	97	1	0	0	0	0	0	180	180	
		96	1	0	0	0	0	0	5	5	
		95	No reports received								
		88	4	253	0	0	250	503	1,256	1,759	
148-79-8 *	Thiabendazole	97	4	2,520	0	0	0	2,520	0	2,520	
		96	2	4,830	0	0	0	4,830	0	4,830	
		95	3	3,929	0	0	0	3,929	0	3,929	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
62-55-5	Thioacetamide	97	No reports received								
		96	No reports received								
		95	No reports received								
		88	1	500	0	0	0	500	0	500	
28249-77-6 *	Thiobencarb	97	2	634	0	0	0	634	4,935	5,569	
		96	2	811	0	0	0	811	4,930	5,741	
		95	2	510	0	0	0	510	3,032	3,542	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
59669-26-0 *	Thiodicarb	97	3	792	0	0	250	1,042	1,000	2,042	
		96	3	1,509	0	0	16,282	17,791	250	18,041	
		95	2	376	0	0	0	376	500	876	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
23564-06-9 *	Thiophanate ethyl	97	No reports received								
		96	2	0	0	0	0	0	0	0	
		95	No reports received								
		88	NR	NR	NR	NR	NR	NR	NR	NR	
23564-05-8 *	Thiophanate-methyl	97	9	13,749	0	0	13,240	26,989	14,318	41,307	
		96	6	497	0	0	0	497	1,167	1,664	
		95	3	502	0	0	0	502	0	502	
		88	NR	NR	NR	NR	NR	NR	NR	NR	

**Note: On-site Releases** from Section 5 of Form R. **Off-site Releases** are from Section 6 (transfers off-site to disposal) of Form R. **Off-site Releases** include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

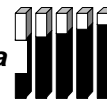


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
7696-12-0 *	Tetramethrin	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	437	0	437	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7440-28-0	Thallium	97	0	8	90,406	2	0	148	1,020	91,584	0
		96	No reports received								
		95	688,093	3,852	0	0	0	190	31	692,166	0
		88	No reports received								
--	Thallium compounds	97	0	0	0	0	0	180	0	180	0
		96	0	0	0	0	0	10	0	10	0
		95	No reports received								
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
148-79-8 *	Thiabendazole	97	0	0	0	0	0	1,073	2,600	3,673	0
		96	0	0	0	0	5,700	1,266	4,800	11,766	0
		95	1	0	0	2,160	1,200	1,931	3,740	9,032	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
62-55-5	Thioacetamide	97	No reports received								
		96	No reports received								
		95	No reports received								
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
28249-77-6 *	Thiobencarb	97	147	0	0	0	0	35	5,053	5,235	0
		96	380	0	0	0	0	0	5,064	5,444	0
		95	0	0	0	0	0	620	3,162	3,782	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
59669-26-0 *	Thiodicarb	97	160,780	0	0	0	29,309	13,942	1,063	205,094	831
		96	57,100	0	0	0	41,632	20,510	16,791	136,033	0
		95	1,500	0	0	0	41,139	160	180	42,979	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
23564-06-9 *	Thiophanate ethyl	97	No reports received								
		96	0	0	0	0	0	0	0	0	0
		95	No reports received								
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
23564-05-8 *	Thiophanate-methyl	97	9,400	0	0	0	0	6,819	11,755	27,974	26,480
		96	9,400	0	0	0	0	5,614	1,632	16,646	0
		95	320	0	0	0	0	2,677	507	3,504	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	
79-19-6	Thiosemicarbazide	97	No reports received							
		96	No reports received							
		95	1	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
62-56-6 *	Thiourea	97	30	1,026	347	5,000	250	6,623	4,212	10,835
		96	25	1,212	339	5,000	250	6,801	2,590	9,391
		95	26	1,630	1,487	5,000	250	8,367	4,269	12,636
		88	26	2,004	16,951	5,940	750	25,645	2,303	27,948
137-26-8 *	Thiram	97	61	3,024	16	0	62	3,102	80,186	83,288
		96	61	3,638	41	0	2,005	5,684	94,421	100,105
		95	60	2,856	50	0	0	2,906	98,617	101,523
		88	NR	NR	NR	NR	NR	NR	NR	NR
1314-20-1	Thorium dioxide	97	1	0	0	0	0	0	0	0
		96	1	1	0	0	0	1	0	1
		95	1	1	0	0	0	1	0	1
		88	3	1,580	0	0	0	1,580	677,549	679,129
7550-45-0	Titanium tetrachloride	97	36	21,202	0	0	0	21,202	37,660	58,862
		96	34	30,851	0	0	0	30,851	34,013	64,864
		95	33	20,299	0	0	0	20,299	32,282	52,581
		88	41	78,668	0	0	1,400	80,068	0	80,068
108-88-3 *	Toluene	97	3,062	112,938,943	30,998	513,635	740,406	114,223,982	1,452,282	115,676,264
		96	3,250	125,995,382	68,730	329,058	438,463	126,831,633	1,057,460	127,889,093
		95	3,454	147,158,510	53,263	310,643	85,801	147,608,217	881,153	148,489,370
		88	4,006	299,954,882	196,957	1,473,666	646,718	302,272,223	9,615,791	311,888,014
584-84-9	Toluene-2,4-diisocyanate	97	62	6,503	5	0	0	6,508	6,178	12,686
		96	61	7,333	0	0	192	7,525	3,586	11,111
		95	64	7,805	0	0	0	7,805	611	8,416
		88	257	165,062	0	0	1,040	166,102	36,178	202,280
91-08-7	Toluene-2,6-diisocyanate	97	30	2,800	0	0	0	2,800	1,360	4,160
		96	33	13,666	0	0	48	13,714	897	14,611
		95	40	3,044	0	0	0	3,044	153	3,197
		88	189	492,192	0	0	510	492,702	9,444	502,146
26471-62-5	Toluene-diisocyanate (mixed isomers)	97	174	51,804	255	0	359	52,418	37,897	90,315
		96	183	45,313	0	0	353	45,666	33,029	78,695
		95	196	48,856	105	0	275	49,236	26,263	75,499
		88	NR	NR	NR	NR	NR	NR	NR	NR

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
79-19-6	Thiosemicarbazide	97	No reports received								
		96	No reports received								
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
62-56-6 *	Thiourea	97	4,456	872	0	0	12,779	11,821	9,087	39,015	0
		96	4,665	0	0	0	664	11,023	15,415	31,767	0
		95	7,082	0	0	0	18,535	11,867	10,652	48,136	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
137-26-8 *	Thiram	97	46,680	40,807	0	1,402	42	22,889	108,595	220,415	0
		96	20,552	44,525	0	409	40	8,963	95,495	170,984	0
		95	18,712	31,501	0	5	407	10,622	101,354	162,601	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1314-20-1	Thorium dioxide	97	6,100	0	0	0	0	0	640	6,740	0
		96	22,000	0	0	0	0	0	2,200	24,200	0
		95	26,000	0	0	0	0	2,600	1	28,601	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7550-45-0	Titanium tetrachloride	97	0	148,361	0	5	26,440,106	212,926	58,778	26,860,176	11
		96	0	136,039	0	1	26,706,771	166,720	64,721	27,074,252	125
		95	0	129,787	0	0	23,836,598	2,928	52,646	24,021,959	11
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
108-88-3 *	Toluene	97	1,119,206,056	28,405,851	216,605,276	88,849,998	217,192,273	19,924,367	113,112,450	1,803,296,271	272,801
		96	967,406,707	26,796,920	187,671,819	93,084,118	201,517,569	19,645,617	125,879,671	1,622,002,421	628,951
		95	1,006,166,384	25,232,421	214,676,316	78,575,881	192,078,612	19,526,920	144,274,863	1,680,531,397	370,170
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
584-84-9	Toluene-2,4-diisocyanate	97	317	389	0	29,423	1,596	9,715	10,992	52,432	21,320
		96	547	0	0	27,876	1,107	10,881	5,999	46,410	2,874
		95	427	0	37,664	16,408	3,311	20,201	6,227	84,238	10
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
91-08-7	Toluene-2,6-diisocyanate	97	79	0	0	2,754	714	2,111	2,750	8,408	439
		96	137	6,417	0	12,222	150	16,908	7,006	42,840	718
		95	107	0	9,416	3,705	652	1,542	7,511	22,933	2
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
26471-62-5	Toluene-diisocyanate (mixed isomers)	97	6,300	1,235	16,421,251	39,793	720,297	910,358	56,838	18,186,072	30,757
		96	12,100	0	16,337,483	32,777	5,054,902	525,976	57,598	22,020,836	298
		95	15,224	2,784	5,800,065	60,045	2,876,258	195,978	60,100	9,010,454	11,604
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	On-site Releases						Off-site Releases		Total On- and Off-site Releases Pounds
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds		
95-53-4	o-Toluidine	97	22	40,491	273	7,440	5	48,209	3,151	51,360	
		96	21	17,581	74	17,450	10	35,115	1,401	36,516	
		95	23	12,826	256	22,140	12	35,234	55	35,289	
		88	18	46,922	1,902	250	5,024	54,098	670	54,768	
43121-43-3 *	Triadimefon	97	3	0	0	0	0	0	0	0	
		96	1	0	0	0	0	0	0	0	
		95	1	0	0	0	0	0	0	0	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
2303-17-5 *	Triallate	97	2	519	0	0	0	519	14,264	14,783	
		96	2	589	0	0	0	589	16,509	17,098	
		95	2	588	0	0	0	588	24,076	24,664	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
101200-48-0 *	Tribenuron methyl	97	1	1	0	0	0	1	0	1	
		96	1	1	0	0	0	1	0	1	
		95	1	1	0	0	0	1	0	1	
		88	NR	NR	NR	NR	NR	NR	NR	NR	NR
1983-10-4 *	Tributyltin fluoride	97	No reports received								
		96	No reports received								
		95	1	0	23	0	0	23	0	23	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
2155-70-6 *	Tributyltin methacrylate	97	2	14	3	0	0	17	0	17	
		96	2	14	8	0	0	22	0	22	
		95	2	25	23	0	0	48	0	48	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
78-48-8 *	S,S,S-Tributyltri-thiophosphate	97	2	1,611	2	0	0	1,613	0	1,613	
		96	2	1,798	2	0	8	1,808	0	1,808	
		95	2	1,730	2	0	0	1,732	0	1,732	
		88	NR	NR	NR	NR	NR	NR	NR	NR	
52-68-6 *	Trichlorfon	97	3	0	0	0	0	0	0	0	
		96	2	0	0	0	0	0	0	0	
		95	2	0	0	0	0	0	0	0	
		88	5	253	0	0	0	253	487	740	
76-02-8	Trichloroacetyl chloride	97	1	1	0	0	0	1	0	1	
		96	1	1	0	0	0	1	0	1	
		95	1	1	0	0	0	1	0	1	
		88	NR	NR	NR	NR	NR	NR	NR	NR	

Note: On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



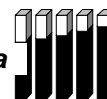


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
95-53-4	o-Toluidine	97	60	0	232,012	48,861	160,399	83,592	48,194	573,118	69
		96	58	0	231,376	78,475	144,527	129,804	35,209	619,449	0
		95	49	0	95,623	139,297	94,846	127,937	34,825	492,577	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
43121-43-3 *	Triadimefon	97	0	0	0	0	0	26	0	26	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
2303-17-5 *	Triallate	97	0	0	0	0	16,000	91,390	7,962	115,352	0
		96	1,107	0	0	0	11,000	110,676	17,507	140,290	18
		95	19,838	0	0	0	93,000	52,830	24,149	189,817	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
101200-48-0 *	Tribenuron methyl	97	0	0	0	0	0	17,581	1	17,582	0
		96	0	0	0	0	0	17,387	1	17,388	0
		95	0	0	0	0	0	5,144	1	5,145	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1983-10-4 *	Tributyltin fluoride	97	No reports received								
		96	No reports received								
		95	0	0	0	0	250	0	23	273	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
2155-70-6 *	Tributyltin methacrylate	97	0	0	0	296	0	29,806	27	30,129	0
		96	0	0	0	210	160	23,114	32	23,516	0
		95	0	0	0	25	9,096	4,320	48	13,489	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
78-48-8 *	S,S,S-Tributyltri-thiophosphate	97	0	0	0	0	2,754	111	1,671	4,536	0
		96	0	0	0	0	33,373	116	1,608	35,097	0
		95	0	0	0	0	2,541	316	1,717	4,574	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
52-68-6 *	Trichlorfon	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
76-02-8	Trichloroacetyl chloride	97	0	0	0	0	0	0	1	1	0
		96	0	0	0	0	0	0	1	1	0
		95	0	0	0	0	0	0	1	1	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
120-82-1 *	1,2,4-Trichlorobenzene	97	31	150,883	533	5,800	156,200	313,416	2,632	316,048
		96	33	157,331	433	750	0	158,514	4,487	163,001
		95	31	168,490	259	12,500	0	181,249	41,648	222,897
		88	56	1,532,913	31,628	7,408	3,073	1,575,022	164,144	1,739,166
71-55-6 *	1,1,1-Trichloroethane	97	250	3,879,346	195	1,245	60,167	3,940,953	17,134	3,958,087
		96	403	9,058,864	844	1,354	26,633	9,087,695	35,536	9,123,231
		95	804	23,576,663	1,118	126	38,470	23,616,377	124,363	23,740,740
		88	3,921	180,841,849	95,624	1,000	204,923	181,143,396	5,947,625	187,091,021
79-00-5 *	1,1,2-Trichloroethane	97	23	296,348	621	0	0	296,969	113	297,082
		96	22	339,050	516	0	16	339,582	85	339,667
		95	21	280,347	870	0	0	281,217	84	281,301
		88	29	1,741,442	5,303	0	89	1,746,834	19,810	1,766,644
79-01-6 *	Trichloroethylene	97	627	17,586,325	563	986	3,975	17,591,849	176,747	17,768,596
		96	674	21,420,513	541	1,291	9,740	21,432,085	76,327	21,508,412
		95	739	26,084,675	1,477	550	3,577	26,090,279	66,225	26,156,504
		88	953	55,943,736	13,801	390	21,186	55,979,113	1,466,469	57,445,582
75-69-4 *	Trichlorofluoromethane (CFC-11)	97	28	431,631	558	0	395	432,584	228	432,812
		96	29	701,451	961	0	5,575	707,987	180	708,167
		95	54	957,461	410	22	0	957,893	4,149	962,042
		88	NR	NR	NR	NR	NR	NR	NR	NR
95-95-4 *	2,4,5-Trichlorophenol	97	No reports received							
		96	No reports received							
		95	No reports received							
		88	1	91	0	0	0	91	20	111
88-06-2 *	2,4,6-Trichlorophenol	97	1	132	27	0	0	159	0	159
		96	1	291	28	0	0	319	0	319
		95	1	161	210	0	0	371	0	371
		88	3	250	50	12,000	0	12,300	10	12,310
96-18-4	1,2,3-Trichloropropane	97	7	13,346	62	0	0	13,408	13	13,421
		96	7	8,763	0	0	0	8,763	0	8,763
		95	5	11,081	1,600	0	0	12,681	0	12,681
		88	NR	NR	NR	NR	NR	NR	NR	NR
57213-69-1 *	Triclopyr triethylammonium salt	97	3	22	0	0	0	22	0	22
		96	2	6	0	0	0	6	0	6
		95	1	3	0	0	0	3	0	3
		88	NR	NR	NR	NR	NR	NR	NR	NR

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
120-82-1 *	1,2,4-Trichlorobenzene	97	1,152,862	4,572	207,700	36,965	352,037	345,803	172,533	2,272,472	31,168
		96	1,250,136	4,330	44,674	51,634	598,429	263,268	161,996	2,374,467	499
		95	40,745	10,541	2,400	108,129	1,137,925	393,319	183,352	1,876,411	6,386
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
71-55-6 *	1,1,1-Trichloroethane	97	37,510,004	721,333	2,211,307	703,916	321,475	378,782	3,831,775	45,678,592	2,703
		96	39,570,292	1,431,057	860,823	349,711	1,184,611	960,889	8,921,825	53,279,208	72,249
		95	60,016,279	3,739,900	3,487,698	1,052,361	1,108,250	1,340,832	23,366,489	94,111,809	14,146
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
79-00-5 *	1,1,2-Trichloroethane	97	28,255,000	12,969,046	9,751,363	82,358	20,447,763	2,599,108	299,040	74,403,678	10,206
		96	23,529,000	13,086,771	16,834,508	305,332	20,388,250	2,787,417	352,717	77,283,995	772
		95	18,699,000	11,817,647	12,061,000	200,596	24,559,416	3,265,021	275,057	70,877,737	481
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
79-01-6 *	Trichloroethylene	97	136,927,893	5,812,121	5,788,807	876,284	3,793,003	1,354,282	17,415,699	171,968,089	388,927
		96	118,562,965	6,773,817	2,050,829	834,045	5,371,947	1,714,273	21,830,647	157,138,523	85,623
		95	154,217,925	8,481,039	2,514,155	1,107,208	5,218,927	2,305,131	25,796,200	199,640,585	221,305
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-69-4 *	Trichlorofluoromethane (CFC-11)	97	67,669	116,557	12,800	15,138	300,034	236,829	432,963	1,181,990	41
		96	168,213	130,539	0	184,710	5,000	177,358	683,382	1,349,202	370
		95	138,712	227,287	618,422	170,699	4,200	291,955	961,314	2,412,589	1,036
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
95-95-4 *	2,4,5-Trichlorophenol	97	No reports received								
		96	No reports received								
		95	No reports received								
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
88-06-2 *	2,4,6-Trichlorophenol	97	0	0	0	0	1,014,286	0	159	1,014,445	0
		96	0	0	0	0	1,020,923	0	319	1,021,242	0
		95	0	0	0	0	1,294,115	0	371	1,294,486	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
96-18-4	1,2,3-Trichloropropane	97	1,500,000	0	680,000	470	1,224,000	8,635,576	13,473	12,053,519	14
		96	6,100,000	0	690,000	0	1,050,000	9,000,006	8,660	16,848,666	0
		95	88,000	9	460,000	0	1,330,000	10,000,000	12,691	11,890,700	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
57213-69-1 *	Triclopyr triethylammonium salt	97	0	0	0	0	33	59	22	114	0
		96	0	0	0	0	8	82	6	96	0
		95	0	0	0	0	4	110	3	117	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
121-44-8	Triethylamine	97	163	1,633,313	18,482	245,917	29,599	1,927,311	3,946	1,931,257
		96	161	1,589,645	21,648	287,951	19,011	1,918,255	21,534	1,939,789
		95	152	2,101,652	27,685	309,512	14,010	2,452,859	17,180	2,470,039
		88	NR	NR	NR	NR	NR	NR	NR	NR
1582-09-8 *	Trifluralin	97	21	11,908	5	0	5	11,918	26,370	38,288
		96	21	15,606	87	0	310	16,003	51,678	67,681
		95	23	17,144	92	0	8,250	25,486	24,490	49,976
		88	17	3,277	601	0	0	3,878	40,557	44,435
26644-46-2 *	Triforine	97	1	0	0	0	0	0	0	0
		96	1	0	0	0	0	0	0	0
		95	2	755	0	0	0	755	0	755
		88	NR	NR	NR	NR	NR	NR	NR	NR
95-63-6	1,2,4-Trimethylbenzene	97	830	7,884,672	7,820	9,097	24,323	7,925,912	148,595	8,074,507
		96	811	7,677,610	9,582	4,567	29,952	7,721,711	144,334	7,866,045
		95	797	7,689,391	8,434	1,042	43,921	7,742,788	52,201	7,794,989
		88	291	4,265,202	10,088	7,964	61,583	4,344,837	200,616	4,545,453
639-58-7 *	Triphenyltin chloride	97	1	0	0	0	0	0	0	0
		96	1	0	0	0	0	0	0	0
		95	1	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR
76-87-9 *	Triphenyltin hydroxide	97	3	3	0	0	0	3	381	384
		96	3	10	0	0	0	10	250	260
		95	3	21	0	0	0	21	250	271
		88	NR	NR	NR	NR	NR	NR	NR	NR
51-79-6	Urethane	97	2	0	0	0	0	0	500	500
		96	3	12,538	0	0	0	12,538	3,675	16,213
		95	4	124	0	0	0	124	3,750	3,874
		88	11	145,123	0	0	0	145,123	1,350	146,473
7440-62-2	Vanadium (fume or dust)	97	20	12,436	708	0	117,510	130,654	43,211	173,865
		96	17	11,096	4	0	114,316	125,416	23,741	149,157
		95	19	14,649	5	0	144,086	158,740	28,780	187,520
		88	33	17,178	4,704	0	87,296	109,178	93,417	202,595
50471-44-8 *	Vinclozolin	97	2	0	0	0	0	0	0	0
		96	1	0	0	0	0	0	0	0
		95	2	0	0	0	0	0	0	0
		88	NR	NR	NR	NR	NR	NR	NR	NR

Note: On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

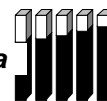


Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
121-44-8	Triethylamine	97	847,575	826,633	235,817	457,030	3,597,276	603,914	1,968,347	8,536,592	164
		96	227,485	538,476	262,294	402,535	2,439,723	736,524	2,039,710	6,646,747	338
		95	488,423	428,122	34,114	531,959	1,604,455	1,035,880	2,581,959	6,704,912	7
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1582-09-8 *	Trifluralin	97	73,000	0	0	0	1,416,990	112,940	21,150	1,624,080	0
		96	71,149	0	0	0	13,000	135,944	66,479	286,572	87
		95	2,107	0	0	3	99,980	76,583	54,675	233,348	9,312
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
26644-46-2 *	Triforine	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	300	890	1,190	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
95-63-6	1,2,4-Trimethylbenzene	97	12,018,755	1,406,156	4,453,521	2,744,955	16,580,512	742,131	8,118,080	46,064,110	19,489
		96	12,546,910	1,372,375	5,210,638	3,237,002	14,448,909	717,699	7,868,103	45,401,363	17,997
		95	13,773,814	1,473,196	4,617,750	3,031,673	9,489,810	470,849	7,911,229	40,768,321	11,068
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
639-58-7 *	Triphenyltin chloride	97	0	0	0	0	0	9,987	0	9,987	0
		96	0	0	0	0	1,400	0	0	1,400	0
		95	0	0	0	0	2,555	0	0	2,555	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
76-87-9 *	Triphenyltin hydroxide	97	0	0	0	0	33,497	4,146	384	38,027	0
		96	0	0	0	0	51,328	340	345	52,013	0
		95	0	0	0	1	109,816	390	401	110,608	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
51-79-6	Urethane	97	0	0	0	0	0	0	1,500	1,500	0
		96	0	0	0	0	0	175	15,467	15,642	500
		95	0	0	0	0	0	1,165	4,742	5,907	2,500
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
7440-62-2	Vanadium (fume or dust)	97	358,477	21,714	0	0	440	1,205	172,015	553,851	128
		96	233,249	11,249	282	0	1,105	915	149,168	395,968	0
		95	191,454	54,731	217	0	0	820	188,573	435,795	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
50471-44-8 *	Vinclozolin	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	1,030	0	1,030	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data

Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
108-05-4	Vinyl acetate	97	188	3,348,952	2,669	119,320	2,168	3,473,109	28,974	3,502,083
		96	184	3,850,101	2,393	300,768	2,834	4,156,096	28,273	4,184,369
		95	155	4,105,652	8,269	783,829	1,717	4,899,467	41,783	4,941,250
		88	146	6,087,497	10,021	2,109,851	18,889	8,226,258	21,811	8,248,069
593-60-2	Vinyl bromide	97	2	5,430	0	0	0	5,430	0	5,430
		96	1	5,840	0	0	0	5,840	0	5,840
		95	2	54,930	0	0	0	54,930	0	54,930
		88	2	4,950	400	0	0	5,350	0	5,350
75-01-4	Vinyl chloride	97	43	919,684	82	370	1	920,137	90,248	1,010,385
		96	47	1,019,992	356	333	1	1,020,682	19,614	1,040,296
		95	48	1,044,665	525	33	1	1,045,224	15,645	1,060,869
		88	53	1,439,189	2,051	53	4,409	1,445,702	4,555	1,450,257
75-35-4 *	Vinylidene chloride	97	23	182,141	412	323	0	182,876	104	182,980
		96	23	177,197	216	0	1	177,414	33	177,447
		95	23	177,509	392	0	0	177,901	260	178,161
		88	21	296,353	3,462	170	429	300,414	44,281	344,695
108-38-3	m-Xylene	97	63	1,368,270	552	3,980	12,789	1,385,591	4,535	1,390,126
		96	60	1,327,486	647	6,962	93,377	1,428,472	3,275	1,431,747
		95	60	1,123,589	892	569	13,838	1,138,888	8,650	1,147,538
		88	68	2,463,043	2,566	0	18,045	2,483,654	107,746	2,591,400
95-47-6	o-Xylene	97	76	1,358,782	439	2,896	251,709	1,613,826	17,524	1,631,350
		96	74	1,243,194	2,515	4,760	88,876	1,339,345	4,611	1,343,956
		95	66	1,329,787	869	569	485	1,331,710	1,152	1,332,862
		88	66	2,241,814	2,786	250	22,461	2,267,311	52,881	2,320,192
106-42-3	p-Xylene	97	42	2,492,320	303	3,027	32,862	2,528,512	10,602	2,539,114
		96	41	2,842,650	489	1,010	88,804	2,932,953	1,114	2,934,067
		95	38	2,923,912	532	569	29,401	2,954,414	1,261	2,955,675
		88	48	5,992,743	3,200	0	49,226	6,045,169	31,108	6,076,277
1330-20-7 *	Xylene (mixed isomers)	97	2,912	74,361,257	36,604	133,615	77,677	74,609,153	723,974	75,333,127
		96	3,107	83,264,700	39,737	132,971	46,792	83,484,200	499,478	83,983,678
		95	3,297	97,317,971	33,834	123,396	101,618	97,576,819	573,672	98,150,491
		88	3,467	158,976,091	204,480	144,728	558,257	159,883,556	6,455,161	166,338,717
87-62-7 *	2,6-Xylidine	97	3	52	0	0	0	52	0	52
		96	2	53	0	0	0	53	0	53
		95	4	275	0	0	0	275	0	275
		88	2	337	1,537	0	0	1,874	0	1,874

Note: On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.



Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
108-05-4	Vinyl acetate	97	827,369	93,926	21,696,559	13,187,593	17,449,172	1,146,917	3,446,620	57,848,156	18,204
		96	651,835	45,484	13,459,141	11,109,800	19,985,218	2,099,835	5,349,175	52,700,488	15,522
		95	311,385	533,356	15,379,353	6,544,593	19,205,133	9,194,987	5,194,288	56,363,095	14,788
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
593-60-2	Vinyl bromide	97	0	0	46,470	17	74	1	5,400	51,962	0
		96	0	0	0	0	39	0	5,800	5,839	0
		95	0	0	0	0	36	0	54,910	54,946	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-01-4	Vinyl chloride <sup>d</sup>	97	398,418,771	82,698	21,752,907	17,663	33,633,983	134,349	957,085	454,997,456	6,426
		96	144,257,010	107,927	34,902,139	16,754	34,549,160	57,371	1,037,881	214,928,242	17,672
		95	118,321,038	90,685	23,368,507	20,853	40,034,145	55,842	1,051,733	182,942,803	31,505
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
75-35-4	*Vinylidene chloride	97	1,651,035	2	250,000	184,033	6,027,739	73,599	182,993	8,369,401	125
		96	1,540,000	26	81,000	141,180	5,944,435	35,456	177,467	7,919,564	163
		95	1,438,000	55	190,253	102,442	6,614,873	85,282	161,353	8,592,258	16,577
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
108-38-3	m-Xylene	97	1,913,415	138,753	1,031,056	202,604	621,697	116,048	1,392,785	5,416,358	6,569
		96	1,413,683	49,353	130,969	81,364	676,808	108,198	1,427,811	3,888,186	97,395
		95	1,917,515	27,006	4,141,480	245,136	3,100,716	131,806	1,132,477	10,696,136	1,431
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
95-47-6	o-Xylene	97	120,668	56,898	2,964,558	1,082,547	2,001,686	880,772	1,472,204	8,579,333	17,460
		96	90,138	190,747	14,825,694	783,169	2,138,350	1,018,738	1,417,016	20,463,852	99,712
		95	317,695	59,486	15,563,897	1,847,249	2,213,038	859,260	1,394,318	22,254,943	11,491
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
106-42-3	p-Xylene	97	156,443	13,487	4,860,571	14,703	3,481,031	119,088	2,536,264	11,181,587	21,316
		96	195,330	3,332	521,427	18,843	1,479,902	119,406	2,916,503	5,254,743	106,184
		95	468,689	8,192	2,168,729	3,563	645,579	8,722	2,945,765	6,249,239	17,280
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
1330-20-7	*Xylene (mixed isomers)	97	122,408,183	42,050,232	139,297,715	77,876,899	64,130,806	10,457,390	75,793,914	532,015,139	150,541
		96	111,627,997	45,049,952	146,035,428	80,734,052	57,293,922	9,029,977	84,099,776	533,871,104	63,453
		95	135,218,559	41,448,000	141,797,405	70,095,010	55,509,020	9,878,105	96,642,372	550,588,471	238,629
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
87-62-7	*2,6-Xyldine	97	0	0	43,038	5,500	11	0	52	48,601	0
		96	0	0	36,684	0	0	0	53	36,737	0
		95	0	0	8,000	0	303	258	225	8,786	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

<sup>d</sup>One facility, Shintech Inc. in Freeport, TX, reported on-site recycling of vinyl chloride of 200,000 pounds in 1995 and 244,000 pounds in 1996. The facility has since revised these quantities to 200,000,000 pounds in 1995 and 244,000,000 pounds in 1996. These revisions change on-site recycling of vinyl chloride to 318,121,038 pounds in 1995 and to 388,013,010 pounds in 1996. Total production-related waste for vinyl chloride changes to 382,742,803 pounds in 1995 and to 458,684,242 pounds in 1996.



**Chapter 3 – Year-to-Year Comparison of Toxics Release Inventory Data**

**Table 3-8A. TRI On-site and Off-site Releases, by Chemical, 1988 and 1995-1997, continued**

CAS Number	Chemical	Year	On-site Releases						Off-site Releases	
			Total Forms Number	Total Air Emissions Pounds	Surface Water Discharges Pounds	Underground Injection Pounds	Releases to Land Pounds	Total On-site Releases Pounds	Transfers Off-site to Disposal Pounds	Total On- and Off-site Releases Pounds
7440-66-6 *	Zinc (fume or dust)	97	411	3,264,646	17,508	1	7,893,441	11,175,596	24,974,649	36,150,245
		96	406	1,663,539	11,924	0	6,780,313	8,455,776	10,084,804	18,540,580
		95	428	2,014,250	45,130	0	6,402,741	8,462,121	9,610,398	18,072,519
		88	644	3,455,937	849,544	140,010	25,617,365	30,062,856	31,450,587	61,513,443
--	Zinc compounds	97	2,649	4,700,944	1,203,833	368,483	117,295,313	123,568,573	182,410,387	305,978,960
		96	2,595	5,855,198	1,078,813	129,498	116,925,797	123,989,306	136,777,135	260,766,441
		95	2,601	4,648,090	1,071,990	212,844	112,184,154	118,117,078	106,025,477	224,142,555
		88	1,661	7,263,205	1,201,109	109,555	113,364,461	121,938,330	84,369,439	206,307,769
12122-67-7 *	Zineb	97	1	0	0	0	0	0	0	0
		96	1	0	0	0	0	0	0	0
		95	1	0	0	0	0	0	0	0
		88	2	1,250	0	0	0	1,250	2,600	3,850
--	Mixtures and other trade name products	97	16	150,313	0	0	9,250	159,563	39,867	199,430
		96	35	23,938	1,030	0	750	25,718	16,780	42,498
		95	30	334,194	3,171	0	0	337,365	4,400	341,765
		88	174	3,450,620	59,210	0	16,099	3,525,929	10,661,927	14,187,856
--	Trade secrets	97	11	14,000	0	0	0	14,000	0	14,000
		96	11	0	0	0	0	0	0	0
		95	12	0	0	0	0	0	0	0
		88	5	0	0	0	0	0	0	0
Total		97	71,670	1,331,663,886	218,371,961	219,513,898	346,904,510	2,116,454,255	461,098,829	2,577,553,084
		96	72,643	1,458,785,384	179,229,798	204,237,312	332,123,472	2,174,375,966	347,074,850	2,521,450,816
		95	75,371	1,579,242,325	175,819,158	233,588,328	315,612,588	2,304,262,399	312,100,306	2,616,362,705
		88	NA	NA	NA	NA	NA	NA	NA	NA

**Note:** On-site Releases from Section 5 of Form R. Off-site Releases are from Section 6 (transfers off-site to disposal) of Form R. Off-site Releases include metals and metal compounds transferred off-site for solidification/stabilization and for wastewater treatment, including to POTWs. Breakdown of Underground Injection and On-site Land Releases (for RCRA Subtitle C landfills) began in 1996 reporting year.

NR: not reportable (chemicals added to the TRI list after 1988 or whose reporting definition has changed since 1988).

NA: not applicable (totals for 1988 are not comparable to those for 1995-1997 because of the changes in the TRI list of chemicals since 1988).

\*Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.





Table 3-8B. Quantities of TRI Chemicals in Waste, by Chemical, 1988 and 1995-1997, continued

CAS Number	Chemical	Year	Recycled		Energy Recovery		Treated		Quantity Released On- and Off-site Pounds	Total Production-related Waste Managed Pounds	Non-Production-related Waste Managed Pounds
			On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds	On-site Pounds	Off-site Pounds			
7440-66-6 *	Zinc (fume or dust)	97	24,831,821	60,647,618	51,376	62,294	764,655	449,041	35,193,560	122,000,365	250
		96	25,210,979	75,552,609	0	45,701	2,192,517	4,290,805	14,540,492	121,833,103	35,874
		95	27,847,425	78,273,698	0	53,501	1,696,402	6,466,483	10,717,304	125,054,813	35,448
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Zinc compounds	97	107,656,323	257,386,303	613,266	261,459	70,211,629	18,374,257	277,306,831	731,810,068	6,770,405
		96	114,830,501	249,167,766	102,429	320,602	3,459,741	25,448,835	235,369,328	628,699,202	10,267,861
		95	130,284,610	251,889,772	446,100	392,434	4,162,627	26,637,547	199,198,691	613,011,781	11,143,135
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
12122-67-7 *	Zineb	97	0	0	0	0	0	0	0	0	0
		96	0	0	0	0	0	0	0	0	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Mixtures and other trade name products	97	0	2,182	3,700	8,282	0	0	188,915	203,079	0
		96	0	32,871	0	6,200	34,000	11,200	84,215	168,486	100
		95	8,025	19,282	96,280,793	375,381	72,738,249	294,743	384,186	170,100,659	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
--	Trade secrets	97	0	0	0	0	0	3,600	14,000	17,600	0
		96	0	0	0	0	984	0	0	984	0
		95	0	0	0	0	0	0	0	0	0
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total <sup>e</sup>		97	7,986,618,922	2,390,787,879	3,805,792,208	525,610,064	7,012,922,513	536,021,338	2,467,643,821	24,725,396,745	37,761,187
		96	7,300,051,732	2,454,579,937	2,763,621,173	510,546,386	6,152,076,079	504,708,015	2,458,897,799	22,144,481,121	30,970,905
		95	11,480,495,719	2,541,332,998	2,822,971,901	503,525,690	7,039,799,031	562,359,889	2,536,870,344	27,487,355,572	34,042,055
		88	NA	NA	NA	NA	NA	NA	NA	NA	NA

Note: Data from Section 8 (Current Year) of Form R.

NA: not applicable (waste management data not required to be reported for 1988 reporting year).

\* Chemicals that are currently active ingredients in EPA's Pesticide Product Information System (all pesticide products imported and/or manufactured in the US) and/or Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Active Ingredients, including Special Review, Canceled/Denied or Suspended, and Restricted Use Pesticides.

<sup>e</sup> Apparent errors by seven facilities and revisions by one facility changes on-site recycling to 7,680,103,504 pounds in 1995 and to 7,543,807,732 pounds in 1996. Revisions by two facilities change on-site energy recovery to 2,727,571,901 pounds in 1995, to 2,711,071,173 pounds in 1996, and to 2,930,962,208 pounds in 1997. Total production-related waste managed changes to 23,591,563,357 pounds in 1995, to 22,335,687,121 pounds in 1996, and to 23,850,566,745 pounds in 1997.