Iron and Steel

1995 TRI Releases for Iron and Steel Facilities (SIC 331) by Number of Facilities Reporting (pounds/year)*

Chemical Name	# Reporting Chemical	Fugitive Air	Point Air	Water Discharges	Underground Injection	Land Disposal	Total Releases	Avg. Releases Per Facility
Zinc Compounds[M]	124	815,939	1,040,835	234,021	250	20,582,148	22,673,193	182,848
Chromium Compounds[C, M]	122	46,814	196,927	37,954	0	2,233,111	2,514,806	20,613
Manganese Compounds[M]	119	374,353	1,803,613	392,851	3,000	27,900,531	30,474,348	256,087
Chromium[M]	119	25,381	55,931	6,666	0	508,968	596,946	5,016
Nickel[C, M]	104	20,036	68,611	7,523	0	156,482	252,652	2,429
Manganese[M]	101	36,050	40,086	11,814	0	790,523	878,473	8,698
Nickel Compounds[C, M]	91	10,117	25,156	17,457	0	262,937	315,667	3,469
Hydrochloric Acid (1995 and after "Acid Aerosols" Only)	90	481,418	1,656,840	5	0	5	2,138,268	23,759
Nitric Acid	72	34,536	512,142	32	0	29,000	575,710	7,996
Lead Compounds[C, M]	69	70,337	180,618	26,175	0	1,207,312	1,484,442	21,514
Lead[C, M]	64	17,378	50,723	3,593	0	89,000	160,694	2,511
Copper[M]	60	4,663	5,655	5,797	0	53,800	69,915	1,165
Ammonia	60	8,596,982	1,276,314	818,748	0	152,984	10,845,028	180,750
Phosphoric Acid	55	27,127	8,502	3,105	0	82,433	121,167	2,203
Copper Compounds[M]	54	19,465	259,792	12,867	0	334,654	626,778	11,607
Sulfuric Acid	52	204,099	104,260	0	0	0	308,359	5,930
Hydrogen Fluoride	45	82,447	424,848	29	0	14,000	521,324	11,585
Zinc (Fume or Dust)[M]	39	246,418	199,446	7,304	0	2,100	455,268	11,674
Toluene	32	205,742	367,514	670	0	712	574,638	17,957
Xylene (Mixed Isomers)	30	141,018	226,862	1,805	0	7	369,692	12,323
Ethylene	25	322,401	1,118,097	0	0	0	1,440,498	57,620
Molybdenum Trioxide	25	9,454	4,092	8,322	0	23,748	45,616	1,825
Benzene[C]	24	379,176	322,248	3,138	0	557	705,119	29,380
Naphthalene	24	250,536	12,088	1,883	0	403	264,910	11,038
Aluminum (Fume or Dust)[M]	24	18,093	33,639	18,308	0	2,094	72,134	3,006
Cyanide Compounds	23	130,941	151,159	61,124	0	13,527	356,751	15,511
Barium Compounds[M]	18	1,206	1,459	11,030	0	49,094	62,789	3,488
Trichloroethylene[C]	18	784,808	575,836	260	0	0	1,360,904	75,606
Ethylene Glycol	17	30,968	255	103,463	0	4,401	139,087	8,182
Phenol	17	674,060	12,136	20,018	0	6,555	712,769	41,928
Chlorine	17	16,169	21,024	1,190	190	0	38,573	2,269
Polycyclic Aromatic Compounds[C]	16	4,085	642	43	0	2	4,772	298
Cobalt[C, M]	15	2,177	2,102	326	0	9,967	14,572	971
Methanol	13	524,568	5,958	0	0	111	530,637	40,818
Propylene	13	21,511	105,650	0	0	0	127,161	9,782
Anthracene	13	10,364	42,786	505	0	0	53,655	4,127
Nitrate Compounds	12	0	0	5,706,855	0	48,000	5,754,855	479,571
1,1,1-Trichloroethane[O]	12	291,754	142,510	0	0	0	434,264	36,189
Ethylbenzene	11	6,706	3,425	750	0	0	10,881	989
Dibenzofuran	11	2,230	27	5	0	0	2,262	206
Cadmium Compounds[C, M]	10	679	517	4	0	0	1,200	120
Styrene[C]	10	2,533	150	0	0	0	2,683	268
Certain Glycol Ethers	9	105,031	302,153	18,000	0	0	425,184	47,243
Methyl Ethyl Ketone	9	523,394	264,237	0	0	0	787,631	87,515
Antimony Compounds[M]	7	606	2,217	6,197	0	3,671	12,691	1,813
1,2,4-trimethylbenzene	7	26,678	11,521	0	0	1	38,200	5,457
Sodium Nitrite	7	16,960	250	45,400	0	0	62,610	8,944
Biphenyl	6	540	0	0	0	0	540	90
Cresol (Mixed Isomers)	6	2,831	597	10	0	0	3,438	573
Dichloromethane[C]	5	276,496	424,193	0	0	0	700,689	140,138
Vanadium (Fume or Dust)[M]	5	355	2,924	0	0	30,632	33,911	6,782
Hydrogen Cyanide	4	2,055	430	0	0	0	2,485	621
Sec-butyl Alcohol	4	18,187	62,503	0	0	0	80,690	20,173
Quinoline	4	280	0	0	0	0	280	70
Tetrachloroethylene[C]	4	134,305	65,866	0	0	0	200,171	50,043
Cadmium[C, M]	4	8	250	0	0	170	428	107
Cobalt Compounds[C, M]	3	75	388	9	0	2,250	2,722	907
N-butyl Alcohol	3	2,657	55,179	0	0	0	57,836	19,279
Carbon Disulfide	3	2,650	1,410	0	0	0	4,060	1,353

1995 TRI Releases for Iron and Steel Facilities (SIC 331) by Number of Facilities Reporting (pounds/year)*

Chemical Name	# Reporting Chemical	Fugitive Air	Point Air	Water Discharges	Underground Injection	Land Disposal	Total Releases	Avg. Releases Per Facility
Phenanthrene	3	18,000	0	0	0	200	18,200	6,067
Calcium Cyanamide	3	0	5	0	0	0	5	2
Pyridine	2	4,030	0	0	0	0	4,030	2,015
Diethanolamine	2	730	0	57,000	0	0	57,730	28,865
Barium[M]	2	382	638	3,637	0	77,121	81,778	40,889
Arsenic Compounds[C, M]	1	6	3,800	0	0	3,200	7,006	7,006
Thiourea[C]	1	250	0	340	0	0	590	590
Acetonitrile	1	0	0	0	0	0	0	0
Methyl Isobutyl Ketone	1	160	0	0	0	0	160	160
2-methylpyridine	1	600	0	0	0	0	600	600
N-methyl-2-pyrrolidone	1	0	7,913	0	0	0	7,913	7,913
Asbestos (Friable)[C]	1	0	0	0	0	0	0	0
Polychlorinated Biphenyls[C]	1	0	0	0	0	0	0	0
Aluminum Oxide (Fibrous Forms)[M]	1	250	0	0	0	0	250	250
Antimony[M]	1	20	616	425	0	1,500	2,561	2,561
Arsenic[C, M]	1	40	40	0	0	0	80	80
Beryllium[C, M]	1	2	1	0	0	940	943	943
Phosphorus (Yellow or White)	1	5	15	0	0	3,900	3,920	3,920
Chlorine Dioxide	1	5	0	5	0	0	10	10
	423**	16,082,327	12,267,621	7,656,663	3,440	54,682,751	90,692,802	214,404

[C] Known or suspect carcinogens [M] Metals and metal compounds [O] Ozone depleters

* Refer to Section III for a discussion of the TRI data and its limitations, methodology used to obtain this data, definitions of the column headings, and the definitions of carcinogens, metals, and ozone depleters.

**Total number of facilities (not chemical reports) reporting to TRI in this industry sector.

1995 TRI Transfers for Iron and Steel Facilities (SIC 331) by Number of Facilities Reporting (pounds/year)*

Chemical Name	# Reporting Chemical	Potw Transfers	Disposal Transfers	Recycling Transfers	Treatment Transfers	Energy Recovery Transfers	Total Transfers	Avg Transfer Per Facility
Zinc Compounds[M]	124	22,768	45,043,648	161,076,355	1,947,577	.	208,090,348	1,678,148
Chromium Compounds[C, M]	122	2,844	5,264,939	12,648,224	1,711,870	4,593	19,665,420	161,192
Manganese Compounds[M]	119	8,836	5,013,032	35,123,503	1,520,361	.	42,185,802	354,503
Chromium[M]	119	3,597	1,111,505	26,689,081	1,887,120	0	29,691,303	249,507
Nickel[C, M]	104	3,610	600,523	14,674,853	58,207	.	15,337,193	147,473
Manganese[M]	101	3,340	1,268,224	17,562,708	1,061,194	.	19,896,216	196,992
Nickel Compounds[C, M]	91	3,514	2,618,530	4,637,685	157,595	.	7,417,324	81,509
Hydrochloric Acid (1995 and after "Acid Aerosols" Only)	90	1,358,466	2,397,609	20,556,576	2,918,806	.	27,231,457	302,572
Nitric Acid	72	561	3,936,995	11,608	5,389,291	.	9,338,455	129,701
Lead Compounds[C, M]	69	2,005	1,746,567	19,811,212	228,350	.	23,045,894	333,998
Lead[C, M]	64	1,913	326,517	7,319,609	1,074,945	.	8,722,989	136,297
Copper[M]	60	1,494	132,762	2,885,947	116,973	.	3,137,176	52,286
Ammonia	60	153,290	286,013	17,600	34,505	2,400	493,808	8,230
Phosphoric Acid	55	29,335	69,240	138,584	64,424	.	301,583	5,483
Copper Compounds[M]	54	4,080	823,011	1,298,746	142,009	.	2,267,846	41,997
Sulfuric Acid	52	1,760	559,017	649,631	3,357,561	.	4,728,252	90,928
Hydrogen Fluoride	45	5,854	965,246	7,452	1,185,884	.	2,164,436	48,099
Zinc (Fume or Dust)[M]	39	3,017	810,586	66,851,862	5,411,809	5,594	73,082,868	1,873,920
Toluene	32	373	507	324	1,041	23,007	25,252	789
Xylene (Mixed Isomers)	30	312	470	9,112	8,506	11,787	30,187	1,006
Ethylene	25	0	.	.	2,100,000	.	2,100,000	84,000
Molybdenum Trioxide	25	805	4,724	170,785	2,200	.	178,514	7,141
Benzene[C]	24	1,251	961	8	3,304	1,400	6,924	289
Naphthalene	24	386	16,880	4	39,478	620	57,368	2,390
Aluminum (Fume or Dust)[M]	24	5	81,840	761,149	253,742	1,000	1,097,736	45,739
Cyanide Compounds	23	103,053	1,927	.	102,696	.	207,676	9,029
Barium Compounds[M]	18	0	356,518	23,564	1,350	.	381,432	21,191
Trichloroethylene[C]	18	2	10,343	302,113	37,934	13,110	363,502	20,195
Ethylene Glycol	17	1,850	9,455	371,538	46,690	4,800	434,333	25,549
Phenol	17	506,661	4,948	1	81,070	.	592,680	34,864
Chlorine	17	1,905	.	183,693	.	.	185,598	10,918
Polycyclic Aromatic Compounds[C]	16	0	2,900	8,400,000	268	.	8,403,168	525,198
Cobalt[C, M]	15	10	43,355	882,284	10	.	925,659	61,711
Methanol	13	0	.	55	.	.	55	4
Propylene	13	0	.	.	21,000	.	21,000	1,615
Anthracene	13	0	1,500	.	26	.	1,526	117
Nitrate Compounds	12	1,105,156	18,953	.	171,000	.	1,295,109	107,926
1,1,1-Trichloroethane[O]	12	1,871	.	104,674	.	8,072	114,617	9,551
Ethylbenzene	11	2	297	220	51	1,200	1,770	161
Dibenzofuran	11	0	1,100	.	40	.	1,140	104
Cadmium Compounds[C, M]	10	5	2,152	281,182	3,361	.	328,625	32,863
Styrene[C]	10	0	44	.	4	.	48	5
Certain Glycol Ethers	9	0	1,790	.	2,500	250	4,540	504
Methyl Ethyl Ketone	9	9	.	115,458	4,051	26,534	146,052	16,228
Antimony Compounds[M]	7	0	15,365	1	250	.	15,616	2,231
1,2,4-trimethylbenzene	7	0	83	.	.	7,822	7,905	1,129
Sodium Nitrite	7	0	148	53	.	.	201	29
Biphenyl	6	0	194	.	19	.	213	36
Cresol (Mixed Isomers)	6	5	.	.	22	.	27	5
Dichloromethane[C]	5	0	.	1,897	.	30,096	31,993	6,399
Vanadium (Fume or Dust)[M]	5	0	5	2,466	.	.	2,471	494
Hydrogen Cyanide	4	0	.	.	.	.	0	0
Sec-butyl Alcohol	4	0	500	.	.	750	1,250	313
Quinoline	4	0	165	.	8	.	173	43
Tetrachloroethylene[C]	4	0	.	38,339	.	6,160	44,499	11,125
Cadmium[C, M]	4	5	5,315	2,526	3,000	.	10,846	2,712
Cobalt Compounds[C, M]	3	0	4	57	1,390	.	1,451	484
N-butyl Alcohol	3	0	.	.	.	3,015	3,015	1,005

1995 TRI Transfers for Iron and Steel Facilities (SIC 331) by Number of Facilities Reporting (pounds/year)*

Chemical Name	# Reporting Chemical	Potw Transfers	Disposal Transfers	Recycling Transfers	Treatment Transfers	Energy Recovery Transfers	Total Transfers	Avg Transfer Per Facility
Carbon Disulfide	3	0	.	.	.	.	0	0
Phenanthrene	3	0	.	.	56	.	56	19
Calcium Cyanamide	3	0	.	.	.	.	0	0
Pyridine	2	0	.	.	.	.	0	0
Diethanolamine	2	0	.	.	.	.	0	0
Barium[M]	2	0	.	.	.	.	0	0
Arsenic Compounds[C, M]	1	0	.	9	1	.	10	10
Thiourea[C]	1	0	.	.	.	.	0	0
Acetonitrile	1	0	.	.	.	.	0	0
Methyl Isobutyl Ketone	1	0	.	.	.	.	0	0
2-methylpyridine	1	0	.	.	.	.	0	0
N-methyl-2-pyrrolidone	1	0	.	.	4,074	.	4,074	4,074
Asbestos (Friable)[C]	1	0	25,100	.	.	.	25,100	25,100
Polychlorinated Biphenyls[C]	1	0	8,238	.	33,313	.	41,551	41,551
Aluminum Oxide (Fibrous Forms)[M]	1	0	.	.	52,369	.	52,369	52,369
Antimony[M]	1	0	.	.	.	.	0	0
Arsenic[C, M]	1	0	.	.	.	.	0	0
Beryllium[C, M]	1	0	.	.	.	.	0	0
Phosphorus (Yellow or White)	1	0	.	.	.	.	0	0
Chlorine Dioxide	1	0	.	.	.	.	0	0
	423**	3,333,950	73,589,745	403,612,748	31,243,305	152,210	513,945,701	1,215,002

[C] Known or suspect carcinogens [M] Metals and metal compounds [O] Ozone depleters

* Refer to Section III for a discussion of the TRI data and its limitations, methodology used to obtain this data, definitions of the column headings, and the definitions of carcinogens, metals, and ozone depleters.

**Total number of facilities (not chemical reports) reporting to TRI in this industry sector.

Ten Largest Volume TRI Releasing Iron and Steel Facilities Reporting Only SIC 331*		
Rank	**Facility[1]**	**Total TRI Releases in Pounds**
1	Northwestern Steel & Wire Co., Sterling, Illinois	15,759,052
2	Elkem Metals Co., Marietta, Ohio	15,632,648
3	U.S. Steel, Gary, Indiana	11,675,262
4	Granite City Steel, Granite City, Illinois	5,381,750
5	USS Fairfield Works, Fairfield, Alabama	4,070,669
6	Armco Inc., Butler, Pennsylvania	2,886,971
7	LTV Steel Co. Inc., Cleveland, Ohio	2,594,790
8	Wheeling-Pittsburgh Steel Corp, Follansbee, Wyoming	1,718,575
9	J & L Specialty Steel Inc., Louisville, Ohio	1,420,979
10	Gulf States Steel Inc., Gadsen, Alabama	1,325,385

Source: *US EPA 1995 Toxics Release Inventory Database*.
*Refer to Section III for a general discussion of TRI data and its limitations. A discussion of the methodology used to develop this table can be found under the heading *Ten Largest Volume TRI Releasing Facilities*.

Ten Largest Volume TRI Releasing Facilities Reporting SIC 331 and Other SIC Codes*			
Rank	**Facility[1]**	**SIC Codes Reported in TRI**	**Total TRI Releases in Pounds**
1	Northwestern Steel & Wire Co., Sterling, IL	3312, 3315	15,759,052
2	Elkem Metals Co., Marietta, OH	3313	15,632,648
3	U.S. Steel, Gary, IN	3312	11,675,262
4	Granite City Steel, Granite City, IL	3,312	5,381,750
5	Kerr-McGee Chemical Corp., Hamilton, MS	2819, 3313	4,279,236
6	USS Fairfield Works, Fairfield, AL	3312	4,070,669
7	Armco Inc., Butler, PA	3312	2,886,971
8	LTV Steel Co. Inc., Cleveland, OH	3312, 3313, 3316	2,594,790
9	Wheeling-Pittsburgh Steel Corp, Follansbee, WV	3312	1,718,575
10	J & L Specialty Steel Inc., Louisville, OH	3312	1,420,979

Source: *US EPA Toxics Release Inventory Database, 1995*.
*Refer to Section III for a general discussion of TRI data and its limitations. A discussion of the methodology used to develop this table can be found under the heading *Ten Largest Volume TRI Releasing Facilities*.

[1] Being included on this list does not mean that the release is associated with non-compliance with environmental laws.

Source Reduction and Recycling Activity for Iron and Steel Facilities (SIC 331) as Reported within TRI*

A	B	C	On-Site			Off-Site			J
			D	E	F	G	H	I	
Year	Quantity of Production-Related Waste (10^6 lbs.)[a]	% Released and Transferred[b]	% Recycled	% Energy Recovery	% Treated	% Recycled	% Energy Recovery	% Treated	% Released and Disposed[c] Off-site
1994	1,188	19%	33%	0%	18%	34%	0%	4%	12%
1995	1,239	49%	32%	0%	15%	35%	0%	6%	18%
1996	1,274	---	32%	0%	15%	36%	0%	5%	12%
1997	1,317	---	31%	0%	16%	35%	0%	6%	12%

Source: *1995 Toxics Release Inventory Database*.
* Refer to Section III for a general discussion of TRI data and its limitations. A discussion of the methodology used to develop this table can be found under the heading *Source Reduction and Recycling Activity*.
[a] Within this industry sector, non-production related waste < 1% of production related wastes for 1995.
[b] Total TRI transfers and releases as reported in Section 5 and 6 of Form R as a percentage of production related wastes.
[c] Percentage of production related waste released to the environment and transferred off-site for disposal.

Five-Year Enforcement and Compliance Summary for the Iron and Steel Industry*									
A	B	C	D	E	F	G	H	I	J
Region	Facilities in Search	Facilities Inspected	Number of Inspections	Average Months Between Inspections	Facilities with 1 or More Enforcement Actions	Total Enforcement Actions	Percent State Lead Actions	Percent Federal Lead Actions	Enforcement to Inspection Rate
I	11	8	34	19	4	6	67%	33%	0.18
II	19	13	174	7	9	32	88%	12%	0.18
III	70	62	1,633	3	27	84	80%	20%	0.05
IV	55	48	863	4	28	68	88%	12%	0.08
V	132	103	1,452	5	40	90	47%	53%	0.06
VI	33	21	160	12	8	14	50%	50%	0.09
VII	10	7	41	15	1	2	50%	50%	0.05
VIII	4	3	35	7	1	3	100%	0%	0.09
IX	11	6	36	18	2	4	100%	0%	0.11
X	4	4	48	5	1	2	100%	0%	0.04
TOTAL	349	275	4,476	5	121	305	71%	29%	0.07

*Data obtained from EPA's Integrated Data for Enforcement Analysis (IDEA) System. For a description of IDEA and the methods used to obtain this data, refer to Section II.C. A discussion of this table can be found under the heading, *Five-Year Enforcement and Compliance Summary*, in Section III.