

Table 2-1. Summary of the 1999 air toxics emissions from the Great Lakes Region

Pollutant Code	Emissions (lb)					Percent (%)			
	Point	Area	Onroad	Nonroad	Total	Point	Area	Onroad	Nonroad
PAHs									
ACENAPHTHEN	76,435.9	53,310.5	13,426.1	9,506.9	152,679.4	50.06	34.92	8.79	6.23
ACENAPHTHYL	612.8	807,742.7	70,663.2	25,121.4	904,140.1	0.07	89.34	7.82	2.78
ANTHRACENE	54,644.2	74,981.3	16,179.4	6,258.8	152,063.6	35.94	49.31	10.64	4.12
BENZ(A)ANTHR	207,934.6	92,869.0	4,006.6	3,560.0	308,370.1	67.43	30.12	1.30	1.15
BENZ(GHI)PE	753.4	53,674.0	4,747.4	6,426.8	65,601.6	1.15	81.82	7.24	9.80
BENZO(A)PYRE	18,430.1	28,048.8	2,446.5	2,096.1	51,021.6	36.12	54.97	4.80	4.11
BENZO(B)FLUO	29.3	28,912.3	2,686.7	1,725.6	33,353.8	0.09	86.68	8.06	5.17
BENZO(K)FLUO	6.8	13,800.8	2,686.7	1,701.8	18,196.0	0.04	75.85	14.77	9.35
CHRYSENE	24,797.6	73,540.3	2,115.1	2,163.8	102,616.8	24.17	71.66	2.06	2.11
DIBENZAHAH	19.4	11,560.9	0.4	158.5	11,739.2	0.17	98.48	0.00	1.35
FLUORANTHENE	65,517.1	99,962.8	16,790.4	12,696.7	194,966.9	33.60	51.27	8.61	6.51
FLUORENE	12,526.6	111,602.0	28,027.5	19,658.3	171,814.4	7.29	64.95	16.31	11.44
INDN(123CDPY	12.9	39,779.0	1,311.6	1,284.6	42,388.0	0.03	93.84	3.09	3.03
NAPHTHALENE	1,149,207.5	9,844,209.1	3,805,310.5	412,630.6	15,211,357.7	7.55	64.72	25.02	2.71
PHENANTHRENE	147,590.1	692,057.6	46,031.3	36,941.2	922,620.2	16.00	75.01	4.99	4.00
PYRENE	2,767.5	115,822.3	23,409.8	14,645.2	156,644.8	1.77	73.94	14.94	9.35
PAH Total	1,761,286	12,141,873	4,039,839	556,576	18,499,574	9.52	65.63	21.84	3.01
Metal Compounds									
ANTIMONY	75,078.3	438.1		262.6	75,779.0	99.08	0.58		0.35
ARSENIC	286,480.8	3,178.8	9,027.7	2,735.4	301,422.7	95.04	1.05	3.00	0.91
BERYLLIUM	10,204.8	744.2		244.4	11,193.4	91.17	6.65		2.18
CADMIUM	76,861.4	19,828.0		319.3	97,008.6	79.23	20.44		0.33
CHROMIUM	435,749.4	5,084.2	4,375.7	5,552.0	450,761.2	96.67	1.13	0.97	1.23
CHROMIUM VI	9,704.9	7,902.4	2,366.5	149.4	20,123.1	48.23	39.27	11.76	0.74
COBALT	93,157.3	1,476.4		301.1	94,934.9	98.13	1.56		0.32
COPPER	1,335,648.6	4,235.6	189,946.5	395.3	1,530,226.0	87.28	0.28	12.41	0.03
LEAD	1,106,121.0	13,932.2	39,387.3	240,222.2	1,399,662.7	79.03	1.00	2.81	17.16

Pollutant Code	Emissions (lb)					Percent (%)			
	Point	Area	Onroad	Nonroad	Total	Point	Area	Onroad	Nonroad
LEAD,ALK		0.7			0.7		100.00		
MANGANESE	1,752,673.8	10,146.3	3,511.8	7,167.0	1,773,498.8	98.83	0.57	0.20	0.40
MERCURY	44,953.9	2,244.8	10,691.6	3,679.6	61,569.9	73.01	3.65	17.36	5.98
NICKEL	899,286.1	19,866.4	5,514.6	29,080.7	953,747.8	94.29	2.08	0.58	3.05
SELENIUM	233,297.8	1,762.1	608.7	286.1	235,954.8	98.87	0.75	0.26	0.12
Metal Total	6,359,218	90,840	265,430	290,395	7,005,884	90.77	1.30	3.79	4.15
Non-Metal Compounds (Excluding PAHs)									
ACETALDEHYDE	1,713,117.9	1,500,357.1	21,593,978.1	14,435,707.7	39,243,160.8	4.37	3.82	55.03	36.79
ACETAMIDE	21.0	7.3			28.3	74.15	25.85		
ACETONITRILE	326,989.7	2,085.3			329,075.0	99.37	0.63		
ACETOPHENONE	34,313.8	1,697.9			36,011.7	95.29	4.71		
ACETYLAMIN,2	2.0				2.0	100.00			
ACROLEIN	118,614.1	1,419,478.7	2,424,185.5	1,562,525.5	5,524,803.8	2.15	25.69	43.88	28.28
ACRYLAMIDE	4,689.4				4,689.4	100.00			
ACRYLIC ACID	59,451.0	18.8			59,469.8	99.97	0.03		
ACRYLONITRIL	457,425.8	35,689.2			493,115.0	92.76	7.24		
ALLYL CHLORI	69.5	111.2			180.7	38.45	61.55		
AMINOBIPE,4	3.2				3.2	100.00			
ANILINE	38,732.2				38,732.2	100.00			
ANISIDINE,O-	1.3				1.3	100.00			
ASBESTOS	1,902.6				1,902.6	100.00			
ATRAZINE	314.0	7,064,291.7			7,064,605.7	0.00	100.00		
BENZENE	4,688,131.8	33,916,580.2	109,325,544.9	45,304,888.3	193,235,145.2	2.43	17.55	56.58	23.45
BENZIDINE	11.2				11.2	100.00			
BENZOTRICHLO	1,645.0				1,645.0	100.00			
BENZYL CHLOR	96,777.0	53.1			96,830.1	99.95	0.05		
BIPHENYL	125,578.2	30,203.9			155,782.1	80.61	19.39		
BIS(2-CLETH)	115.3				115.3	100.00			

Pollutant Code	Emissions (lb)					Percent (%)			
	Point	Area	Onroad	Nonroad	Total	Point	Area	Onroad	Nonroad
BROMOFORM	9,073.0	0.2			9,073.2	100.00	0.00		
BROMOMETH	142,463.2	9,757,010.9			9,899,474.1	1.44	98.56		
BUTADIENE,13	368,056.1	8,384,604.4	14,252,454.6	5,937,695.5	28,942,810.7	1.27	28.97	49.24	20.52
CALCIUM CYAN	499.0				499.0	100.00			
CAPTAN	3,730.3				3,730.3	100.00			
CARBARYL	940.0				940.0	100.00			
CARBON DISUL	5,194,056.1	28,203.2			5,222,259.3	99.46	0.54		
CARBON TETRA	44,759.2	35,478.5			80,237.7	55.78	44.22		
CARBONYL SUL	8,210,547.5	1,852.4			8,212,399.9	99.98	0.02		
CATECHOL	907.6				907.6	100.00			
CHLORDANE	2.5				2.5	100.00			
CHLORINE	1,981,991.0	3,445,070.4	21,180.2	1,650.1	5,449,891.8	36.37	63.21	0.39	0.03
CHLOROACETIC	0.2				0.2	100.00			
CHLOROBENZ	236,789.9	3,105,176.5			3,341,966.4	7.09	92.91		
CHLOROETHANE	650,530.2	376,805.1			1,027,335.3	63.32	36.68		
CHLOROFORM	490,122.7	238,730.3			728,853.0	67.25	32.75		
CHLOROPRENE	78.7	147.5			226.2	34.79	65.21		
CLACETOPHE,2	611.7	0.03			611.8	100.00	0.00		
CLBENZILATE	2.0				2.0	100.00			
CLMETH METH	65.0				65.0	100.00			
COKE OVEN GS	1,022,445.9				1,022,445.9	100.00			
CRESOL MX IS	340,556.2	10.7			340,566.9	100.00	0.00		
CRESOL,M	24,288.6				24,288.6	100.00			
CRESOL,O	10,444.0				10,444.0	100.00			
CRESOL,P	24,795.9				24,795.9	100.00			
CUMENE	494,746.6	81,901.1	18,632.7		595,280.5	83.11	13.76	3.13	
CYANIDE	372,512.0	10.9			372,522.9	100.00	0.00		
D,2,4	3,957.1	3,463,450.0			3,467,407.1	0.11	99.89		
DIBENZOFURAN	4,909.8	316.4			5,226.2	93.95	6.05		
DIBROMO3,12	9.8				9.8	100.00			

Pollutant Code	Emissions (lb)				Percent (%)				
	Point	Area	Onroad	Nonroad	Total	Point	Area	Onroad	Nonroad
DIBROMOET,12	2,747.0	508.9			3,255.9	84.37	15.63		
DIBUTYL PHTH	52,966.7	2,151,488.3			2,204,455.0	2.40	97.60		
DICHLORETH12	67,073.8	30,538.1			97,611.9	68.71	31.29		
DICHLORVOS	27.8				27.8	100.00			
DICLBENZ,14	102,662.2	3,837,075.1			3,939,737.4	2.61	97.39		
DICLBENZD,33	1.0				1.0	100.00			
DICLETH,11-	17,430.7	1,230.1			18,660.8	93.41	6.59		
DICLPROPE,13	242.9	9,687,715.1			9,687,958.0	0.00	100.00		
DIETH SULFAT	14.2				14.2	100.00			
DIETHANOLAMI	62,806.2	33.5			62,839.7	99.95	0.05		
DIEYLHEX PHT	34,257.2				34,257.2	100.00			
DIMETH HY,11	8.0				8.0	100.00			
DIMETH PHTHA	57,489.5	21.3			57,510.8	99.96	0.04		
DIMETH SULFA	9,549.7	8.2			9,557.9	99.91	0.09		
DIMETHBNZ,33	2.0				2.0	100.00			
DIMETHFORMAM	328,771.3	375,634.7			704,406.1	46.67	53.33		
DIMETHOXY,33	1.5				1.5	100.00			
DIMETHYLANIL	4,226.2	1,974.7			6,200.9	68.16	31.84		
DINITRO-O-CR	5.0				5.0	100.00			
DINITROPH,24	159.3				159.3	100.00			
DINITRTOL,24	44.4	294.3			338.6	13.10	86.90		
DIOCTYL PHTH	13,051.6	49.6			13,101.2	99.62	0.38		
DIOXANE	35,911.6	1,123.7			37,035.3	96.97	3.03		
DIPHENHYD,12	2.0				2.0	100.00			
EPICLHYDRIN	80,716.4	29.4			80,745.8	99.96	0.04		
EPOXYBUT,12	653.9				653.9	100.00			
ETH ACRYLATE	18,511.5	15.9			18,527.4	99.91	0.09		
ETHYL CARBAM	79.1				79.1	100.00			
ETHYLBENZENE	4,153,267.6	12,546,530.0	45,228,993.0	30,764,885.2	92,693,675.8	4.48	13.54	48.79	33.19
ETHYLENE GLY	583,571.2	9,205,772.7			9,789,344.0	5.96	94.04		

Pollutant Code	Emissions (lb)					Percent (%)			
	Point	Area	Onroad	Nonroad	Total	Point	Area	Onroad	Nonroad
ETHYLENE OXI	194,346.9	1,272,818.9			1,467,165.8	13.25	86.75		
ETHYLENE THI	10.0				10.0	100.00			
FORMALDEHYDE	9,205,903.6	8,569,225.8	49,533,331.0	33,193,202.1	100,501,662.5	9.16	8.53	49.29	33.03
GLYCOL ETHRS	11,659,727.5	14,300,408.4			25,960,135.9	44.91	55.09		
HCL	246,429,839.6	1,393,438.4		1,371.6	247,824,649.5	99.44	0.56		0.00
HEPTACHLOR	2.0				2.0	100.00			
HEXACL-1,3-C	81.4	3.6			84.9	95.81	4.19		
HEXAMETHYL16	8,632.0	0.3			8,632.3	100.00	0.00		
HEXANE	20,438,212.0	25,155,348.4	30,246,348.8	18,221,372.4	94,061,281.5	21.73	26.74	32.16	19.37
HEXCHLORETH	40,489.9				40,489.9	100.00			
HEXCL-13-BUT	271.0	4.4			275.4	98.39	1.61		
HEXCLBENZENE	2.0	1.3			3.3	59.99	40.01		
HF	25,519,107.9	1,226.0		171.5	25,520,505.3	99.99	0.00		0.00
HYDRAZINE	485.7				485.7	100.00			
HYDROGEN CYA	180,302.9	1,501,407.3			1,681,710.2	10.72	89.28		
HYDROGEN SUL	7,200,675.4				7,200,675.4	100.00			
HYDROQUINONE	9,064.3	15,983.0			25,047.3	36.19	63.81		
ISOPHORONE	119,437.4	68,189.9			187,627.2	63.66	36.34		
LINDANE ISO	5.2				5.2	100.00			
MALEIC ANHYD	225,963.8				225,963.8	100.00			
METEN BIS,44	4,185.0				4,185.0	100.00			
METH ETH KET	23,229,112.1	44,039,154.0	293,033.6		67,561,299.7	34.38	65.18	0.43	
METH HYDRAZI	20,857.5	0.7			20,858.2	100.00	0.00		
METH IODIDE	349.4				349.4	100.00			
METH ISOBUT	6,539,600.1	25,764,633.8			32,304,233.9	20.24	79.76		
METH ISOCYAN	34.0				34.0	100.00			
METH METHACR	639,654.0	15,106.9			654,760.9	97.69	2.31		
METH TERT BU	237,106.3	101,576.0	10,951,374.8	4,839,222.1	16,129,279.1	1.47	0.63	67.90	30.00
METHANOL	31,693,872.6	39,249,798.9	16,296,496.0		87,240,167.5	36.33	44.99	18.68	
METHENE DIAN	4,101.0				4,101.0	100.00			

Pollutant Code	Emissions (lb)					Percent (%)			
	Point	Area	Onroad	Nonroad	Total	Point	Area	Onroad	Nonroad
METHENE(B)4-	254,183.8	554.9			254,738.7	99.78	0.22		
METHOXYCHLOR	320.0				320.0	100.00			
METHYL CHLOR	1,286,071.2	494,077.1			1,780,148.3	72.25	27.75		
METHYLENE CL	15,944,333.7	27,136,580.1			43,080,913.8	37.01	62.99		
NDIMETH CARB	4.0				4.0	100.00			
NITRBIPHEN,4	0.8				0.8	100.00			
NITROBENZ	509.8	41.8			551.6	92.42	7.58		
NITROPHENL,4	615.1				615.1	100.00			
NITROPROPA,2	91.8	119.6			211.4	43.42	56.58		
NITROSODIMET	2.0				2.0	100.00			
NITROSOMORPH	1.2				1.2	100.00			
PCBS	153.2	0.1			153.3	99.93	0.07		
PCDD	5.7	1.0			6.8	84.79	15.21		
PCDF	6.6	5.6			12.2	54.05	45.95		
PCP	5.3				5.3	100.00			
PENTCLNITBEN	8.9				8.9	100.00			
PERC	2,779,654.0	55,466,184.8			58,245,838.9	4.77	95.23		
PHENOL	3,445,371.7	1,553.1		22,897.9	3,469,822.7	99.30	0.04		0.66
PHENYLENED,P	1,200.0				1,200.0	100.00			
PHOSGENE	244.0	1.1			245.1	99.56	0.44		
PHOSPHINE	766.1	419.7			1,185.8	64.61	35.39		
PHOSPHORUS	142,832.7	34,377.3	20,343.1	3,076.7	200,629.8	71.19	17.13	10.14	1.53
PHTHALIC ANH	163,161.8				163,161.8	100.00			
PROP IM, 12	6.2				6.2	100.00			
PROPIONALDEH	64,609.8	30.7	2,207,700.8	2,403,296.5	4,675,637.8	1.38	0.00	47.22	51.40
PROPOXUR	108.2				108.2	100.00			
PRPLENE DICH	1,957.2	439.1			2,396.3	81.68	18.32		
PRPLENE OXID	69,901.1	35,204.3			105,105.4	66.51	33.49		
QUINOLINE	7,479.5				7,479.5	100.00			
QUINONE	3,259.9				3,259.9	100.00			

Pollutant Code	Emissions (lb)					Percent (%)			
	Point	Area	Onroad	Nonroad	Total	Point	Area	Onroad	Nonroad
STYRENE	16,888,081.6	427,806.9	11,841,224.0	1,945,131.3	31,102,243.7	54.30	1.38	38.07	6.25
TCDD,2378	3.1	0.01	0.01		3.1	99.25	0.31	0.45	
TCDF,2378	0.5	0.6			1.1	48.61	51.39		
TCE,111	393,957.3	132,260,596.6		11.8	132,654,565.7	0.30	99.70		0.00
TETCLET,1122	14,932.8	5,189.7			20,122.6	74.21	25.79		
TITAN TETCL	262.0				262.0	100.00			
TOL DIAMIN24	12.0				12.0	100.00			
TOLUENE	46,298,147.7	294,386,523.5	308,234,394.8	160,964,051.8	809,883,117.8	5.72	36.35	38.06	19.87
TOLUENE24DII	14,639.1	4,473.7			19,112.8	76.59	23.41		
TOLUIDINE,O-	1,821.2	11.6			1,832.8	99.37	0.63		
TOXAPHENE	15.0				15.0	100.00			
TRICHLORETHY	7,396,994.2	95,719,937.6			103,116,931.8	7.17	92.83		
TRICLBNZ,124	19,480.0	526.4			20,006.4	97.37	2.63		
TRICLETH,112	3,925.7	187.9			4,113.7	95.43	4.57		
TRICLPHN,245	9.3				9.3	100.00			
TRICLPHN,246	908.5				908.5	100.00			
TRIETHAMINE	1,442,750.4	50,800.0			1,493,550.4	96.60	3.40		
TRIFLURALIN	3,111.5	759,312.7			762,424.1	0.41	99.59		
TRIME-PENTAN	60,782.9	1,578,672.0	78,054,161.3	43,214,244.2	122,907,860.4	0.05	1.28	63.51	35.16
VINLIDENE CL	30,387.9	14,701.5			45,089.4	67.39	32.61		
VINYL ACETAT	412,662.5	12,963.2			425,625.8	96.95	3.05		
VINYL CHLOR	356,996.0	410,668.2			767,664.2	46.50	53.50		
XYLENE,M	93,636.9	1,192,122.5	26,178,383.7	369,336.2	27,833,479.3	0.34	4.28	94.05	1.33
XYLENE,O	849,317.7	17,972,427.8	13,699,058.2	198,929.1	32,719,732.9	2.60	54.93	41.87	0.61
XYLENE,P	12,643.4	864,077.6			876,721.0	1.44	98.56		
XYLENES ISO	33,419,152.3	231,898,483.2	173,854,385.9	129,682,852.2	568,854,873.5	5.87	40.77	30.56	22.80
Non-Metal Total	548,410,979	1,132,906,787	914,275,205	493,066,519	3,088,659,490	17.76	36.68	29.60	15.96
Grand Total	556,531,482	1,145,139,500	918,580,474	493,913,491	3,114,164,948	17.87	36.77	29.50	15.86

Table 2-2. The most significant source categories for the top five non-metal compounds.

Pollutant Name	Emissions (lb)	Most Significant Source Category	Percent of Contribution
Toluene	809,883,117.75	Light Duty Gasoline Vehicles	20.99
Xylenes (includes o, m, and p)	568,854,873.51	Light Duty Gasoline Vehicles	16.81
Hydrochloric acid	247,824,649.52	Electric, Gas, and Sanitary Services (SIC code 49xx)	89.72
Benzene	193,235,145.16	Light Duty Gasoline Vehicles	31.27
1,1,1-Trichloroethane	132,654,565.69	Degreasing Equipment	76.27

Table 2-3. The most significant source categories for the top five metal compounds.

Pollutant Name	Emissions (lb)	Most Significant Source Category	Percent of Contribution
Manganese	1,773,498.80	Primary Metal Industries (SIC code 33xx)	56.45
Copper	1,530,226.04	Primary Metal Industries (SIC code 33xx)	74.58
Lead	1,399,662.65	Primary Metal Industries (SIC code 33xx)	50.76
Nickel	953,747.83	Primary Metal Industries (SIC code 33xx)	57.15
Chromium	450,761.21	Primary Metal Industries (SIC code 33xx)	40.52

Table 2-4. Summary of regional air toxics emissions (1996-1999, expressed in LBs).

Calendar Year	1996	1997	1998	1999
PAHs	29,072,422	12,888,310	14,404,640	13,903,159
Non-Metal Compounds (Excluding PAHs)	845,813,767	662,217,430	718,624,462	1,681,552,825
Metal Compounds	7,622,696	5,373,067	5,472,034	6,214,998
Total	882,508,885	680,478,806	738,501,136	1,701,670,983