

Detroit Edison 2009 Toxic Release Inventory

Community Right to Know

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About the Toxic Release Inventory

The Toxic Release Inventory (TRI) is a publicly available database of information on the release and transfer of nearly 650 chemicals by private companies and government facilities. Congress created TRI under the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA) and the U.S. Environmental Protection Agency (EPA) administers the program. Electric utilities were added to the list of manufacturing industries required to report to the TRI in May 1997. Reports are generated once per year for the previous year's emissions.

All TRI report data is available on the EPA's Web site: www.epa.gov/tri.

How to Interpret the Data

Detroit Edison's emissions appear very large.

- The emissions from Detroit Edison's electric power plants are reported in pounds, not in terms of the chemicals' concentrations in the environment. Due to the volume of coal required to generate power for 2.2 million households and businesses, the "pounds" numbers appear very large even though the release concentrations are very low. The TRI Reports do not include the data that would indicate these very low concentrations.
- While emissions of some TRI chemicals are up and others are down from year to year, Detroit Edison's emissions have always been well below the levels at which state and federal regulators may take some action to control emissions. None of the emissions reported in 2009 exceed 32 percent of an action level, and most are between 0 and 10 percent.

However, our emissions do not create significant environmental or health impacts.

- Large numbers are not necessarily an indication of large health and environmental impact. The EPA conducted a study¹, which considered concentration and exposure, on power plant emissions and provided the report's findings to Congress. The EPA concluded that power plant emissions pose minimal impacts on human health.
- The Electric Power Research Institute (EPRI) conducted a study² in 1994 which also concludes that power plant stack emissions pose minimal risks to public health.

1 - Study of Hazardous Air Pollutant Emissions from Electric Utility Steam Generating Units - Final Report to Congress, Vol. 1, EPA-453/R-98-004a, Feb. 1998.

2 - Electric Utility Trace Substances Synthesis Report, Vol. 1-4, Electric Power Research Institute, California, 1994.

- The U.S. EPA has listed approximately 650 chemicals and chemical substances on the TRI list. These chemicals, like many others not on the list, can potentially cause harm depending on a person's exposure or dose. Dose relates to exposure time and concentration. For example,

exposure to ultraviolet rays from the sun can be harmless, cause mild-to-serious sunburn or even a potentially fatal disease such as skin cancer.

- The U.S. EPA's TRI reports do not include dose information and therefore do not provide the public with health information. According to the EPA, "The TRI information is not designed to show if chemical releases pose potential health or environmental hazards. Rather, the reports divulge how many pounds of chemicals companies release, dispose, treat, recycle, etc."

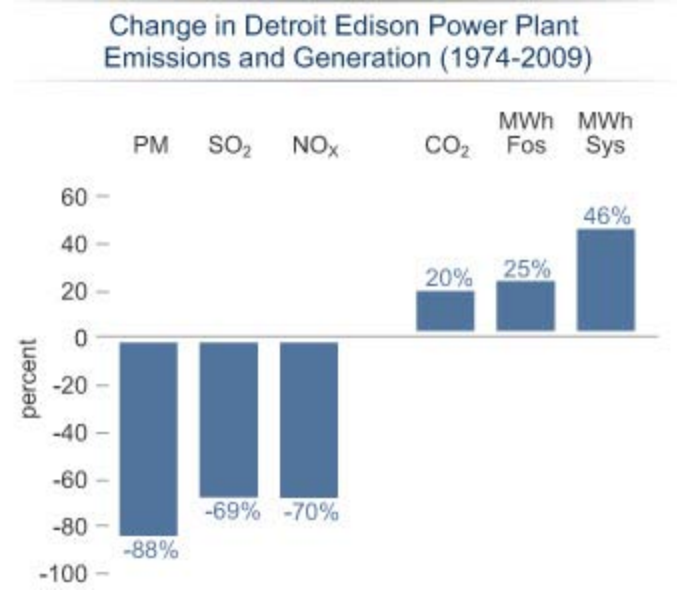
Power plant emissions will vary from year to year based on coal consumption and TRI element concentrations in the coal.

- Detroit Edison produces about 80 percent of the electricity needed for nearly 5 million people of Southeastern Michigan at six coal-fired power plants, with the remainder produced by nuclear power, oil and natural gas. The company relies heavily on coal because it has proven to be an economic, domestically available and abundant fuel.
- Detroit Edison obtains coal from dozens of mines, and the coal from each mine has a unique mix of trace elements that are the source for chemicals reported in the TRI data. Generally, TRI emissions at each plant will vary due to trace elements in coal and volume of coal burned each year.
- Power plants are taken in and out of service for repairs or to accommodate generation needs. Because releases are in pounds, not percentages of power produced, releases will fluctuate from year to year as each plant produces more or less power.

Detroit Edison is committed to the generation of electricity in an environmentally responsible manner.

- Detroit Edison has long been an innovator in using pollution control technologies. For example, the company used electrostatic precipitators as early as 1924 and is among the world leaders in blending low-sulfur coal. We continue to invest in new technology, and have spent \$1.7 billion to install equipment at the Monroe Power Plant to control emissions of sulfur dioxide, nitrogen oxide, mercury, and hydrogen chloride.
- The Toxic Release Inventory includes a category of releases to land. It's important to note that for Detroit Edison, these land "releases" involve disposal of material into engineered and licensed landfills. By-products from coal combustion are not released uncontrolled to the environment.
- In avoiding land releases, Detroit Edison also actively recycles fly ash from several power plants for use as a concrete additive.

Working within Michigan's stringent environmental regulations, Detroit Edison has aggressively reduced air emissions by more than two-thirds in the past 35 years.



2009 Summary

Overall, Detroit Edison's 2009 emissions of chemicals reportable under the EPA's Toxic Release Inventory (TRI) decreased about 20 percent (7 million pounds) from 2008 total emissions. Total coal usage increased 2 percent (370,000 tons) from 2008.

The primary factors resulting in this decrease include lower levels of reportable chemicals in the coal burned at our six coal-fired power plants and the operation of new systems to control nitrogen oxide, sulfur dioxide, hydrogen chloride and mercury at our Monroe Power Plant.

Looking to the Future

Reducing Air Emissions at Monroe

TRI emissions at the Monroe Power Plant – the largest power plant in Michigan – were down significantly in 2009 and will be further reduced in 2010. **Selective catalytic reduction systems** and **flue gas desulfurization systems** working in tandem on two units will reduce air emissions of nitrogen oxide by about 90 percent, sulfur dioxide by about 97 percent, mercury by about 80 percent* and hydrogen chloride (HCL) about 97 percent. The paired SCR/FGD systems on Units 3 and 4 began operation in June and November, 2009. They will operate year round in 2010.

A dry fly ash system has also been installed on two units at Monroe Power Plant. The dry ash system will reduce the amount of ammonia available to release to the air. The dry ash system will initially result in the recycling of 50 percent of fly ash produced by the plant, with a goal of 100% recycling by 2012.



Monroe Power Plant, Monroe, Michigan

* Because the FGD and SCR systems operated in tandem for a limited period of time in 2009, we were not able to obtain quality assured mercury emissions data from those two units. For our 2009 TRI report, we used a statistical model to calculate estimated mercury emissions. Based on the conservative mercury capture assumptions in the model, we reported a 45 percent reduction in mercury air emissions for those two units.

Further information about Detroit Edison's current and historical emissions data can be found on the Web at dteenergy.com.

2009 Total Detroit Edison Releases by Chemical

TRI Chemical	Total	Air (Pounds Emitted)	Land (Pounds Managed)	Water (Pounds Discharged)
Ammonia	14,680	14,400	0	280
Arsenic	89,909	731	83,500	2,678
Barium	10,954,610	18,900	10,910,000	25,710
Benzene	120	120	0	0
Benzo(g,h,l)perylene	5.95	0.60	5.35	0
Beryllium	12,069	32	12,000	37
Chromium	214,637	1,627	211,000	2,010
Cobalt	65,374	300	65,000	74
Copper	379,207	1,610	377,000	597
Dioxin ¹	3.1296	3.1296	0	0
Hydrogen chloride	12,560,000	12,560,000	NA	NA
Hydrogen fluoride	960,000	960,000	NA	NA
Lead	114,565.18	1,014.51	113,446.85	103.83
Manganese	381,377	2,297	377,700	2,080
Mercury	2,500.59	1,795.19	663.91	41.49
Nickel	153,800	1,530	151,000	1,270
PACs ²	504.54	15.09	489.45	0
Polychlorinated Biphenyls ³	0	NA	NA	NA
Selenium	21,400	7,700	9,600	4,100
Styrene	Not reportable	NA	NA	NA
Sulfuric acid	1,468,000	1,468,000	NA	NA
Vanadium	507,760	1,746	499,000	7,014
Zinc	292,076	5,330	284,000	2,746
TOTAL TRI	28,189,598			

¹ Dioxin emissions are reported to the EPA in grams

² PACs = Polycyclic Aromatic Compounds

³ PCB use was greater than TRI threshold, but was not released to the environment

2009 Detroit Edison Releases by Plant

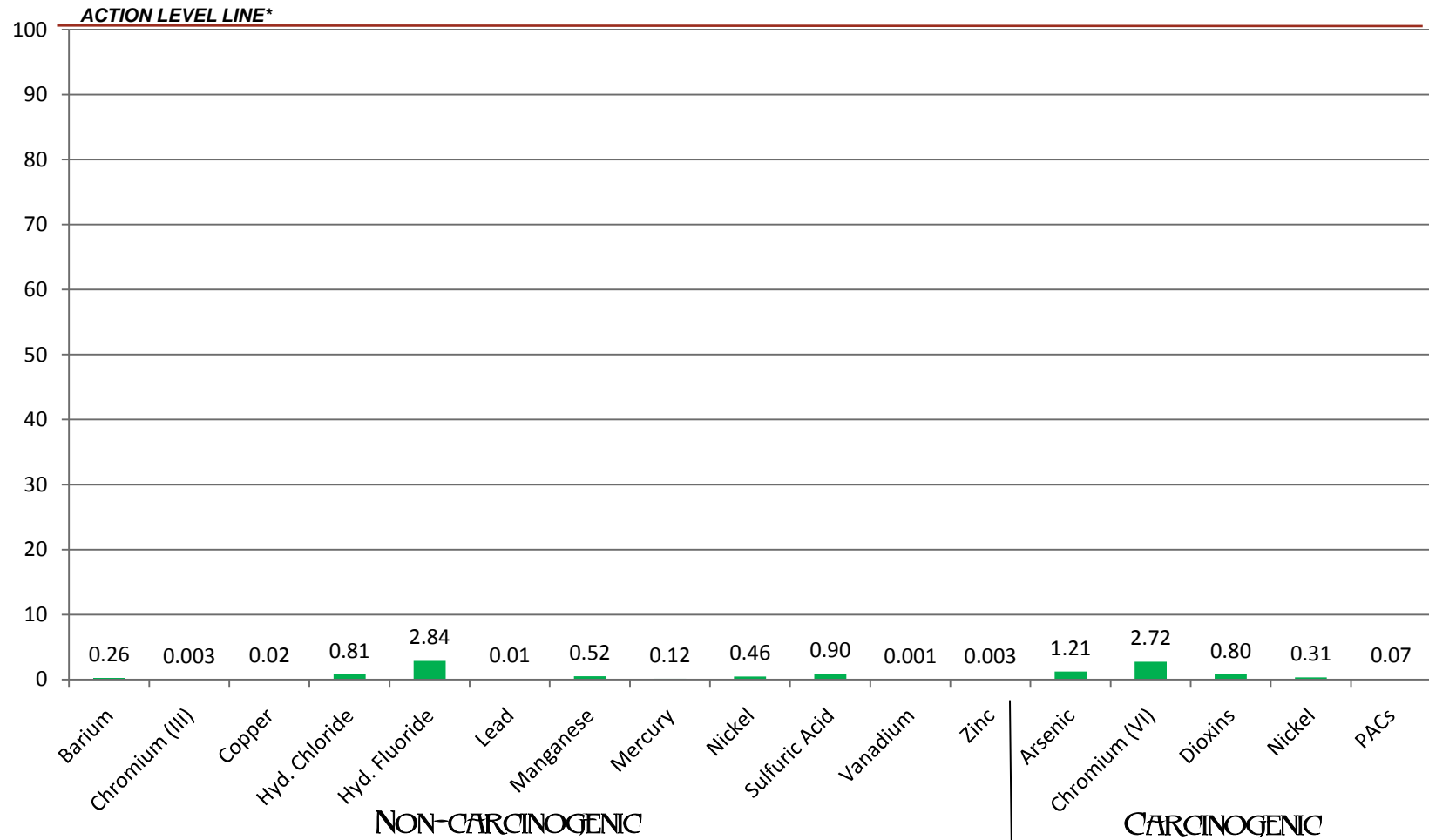
BELLE RIVER POWER PLANT

TRI Chemical	Total	Air (Pounds Emitted)	Land (Pounds Managed)	Water (Pounds Discharged)
Arsenic Compounds	7,609	24	7,500	85
Barium Compounds	2,807,200	1,200	2,800,000	6,000
Benzo(g,h,l)perylene	0.57	0.15	0.42	0
Chromium Compound	17,217	97	17,000	120
Copper Compounds	50,219	170	50,000	49
Dioxin ¹	0.7135	0.7135	0	0
Hydrogen chloride	150,000	150,000	NA	NA
Hydrogen fluoride	150,000	150,000	NA	NA
Lead Compounds	10,085.09	39.47	10,028.70	16.92
Manganese Compounds	74,580	240	74,000	340
Mercury Compounds	411.81	328.28	77.89	5.64
Nickel Compounds	14,194	130	14,000	64
PACs ²	24.92	3.70	21.22	0
Sulfuric acid	42,000	42,000	NA	NA
Vanadium Compounds	57,080	76	57,000	4
Zinc Compounds	38,860	610	38,000	250
TOTAL TRI	3,419,482			

¹ Dioxin emissions are reported to the EPA in grams

² PACs = Polycyclic Aromatic Compounds

COMPARISON OF THIS YEAR'S MODELED GROUND LEVEL CONCENTRATIONS TO ACTION LEVELS (BELLE RIVER POWER PLANT)

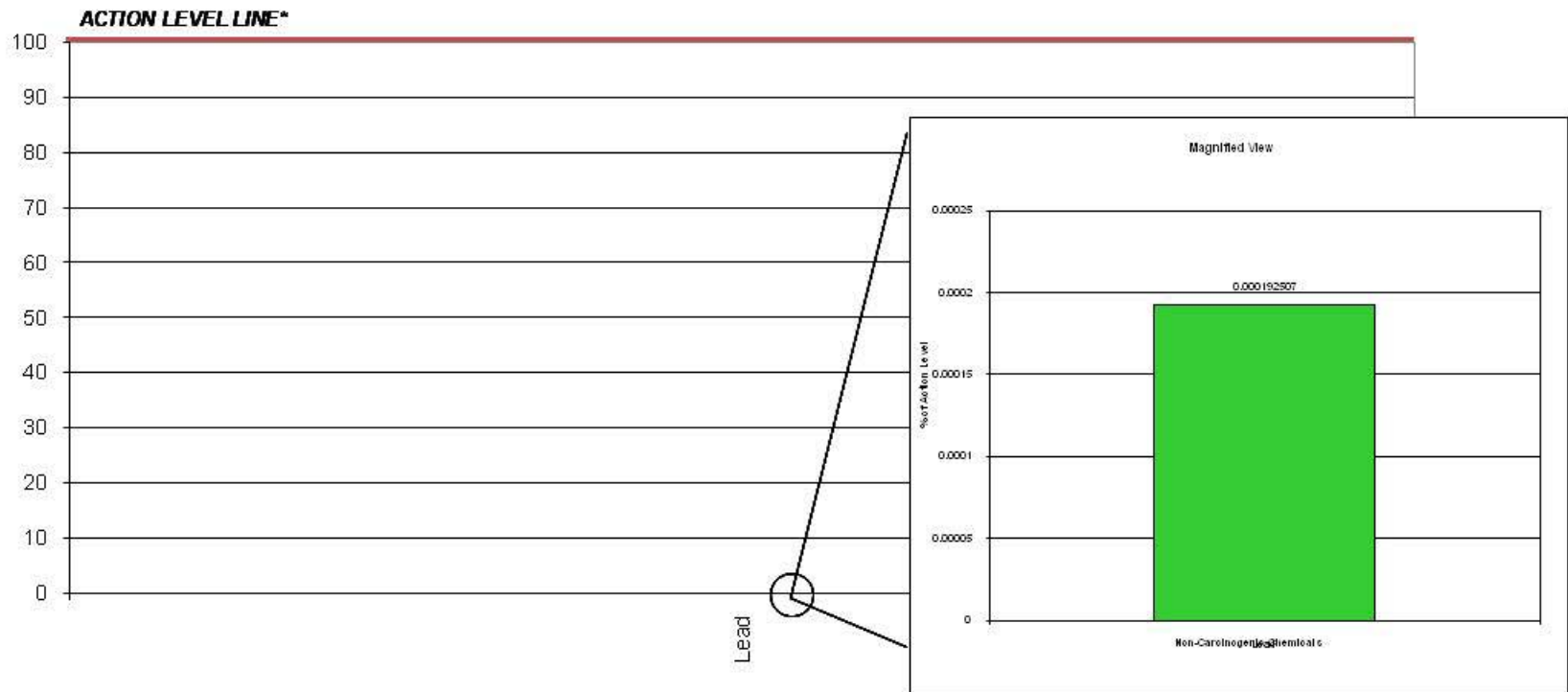


* This line represents the level at which state and federal regulators may take some action to control emissions. The most sensitive individuals - pregnant women, children, the elderly - may have a reaction at levels varying from one to thousands of times greater than this level. Because action levels are different for each chemical, we chose to represent our concentrations as a percent of the "action level line".

FERMI 2

TRI Chemical	Total	Air (Pounds Emitted)	Land (Pounds Managed)	Water (Pounds Discharged)
Lead	976.64	.59	976.06	NA
TOTAL TRI	976.64			

Comparison of This Year's Modeled Ground Level Concentrations to Action Levels (Fermi 2 Power Plant)



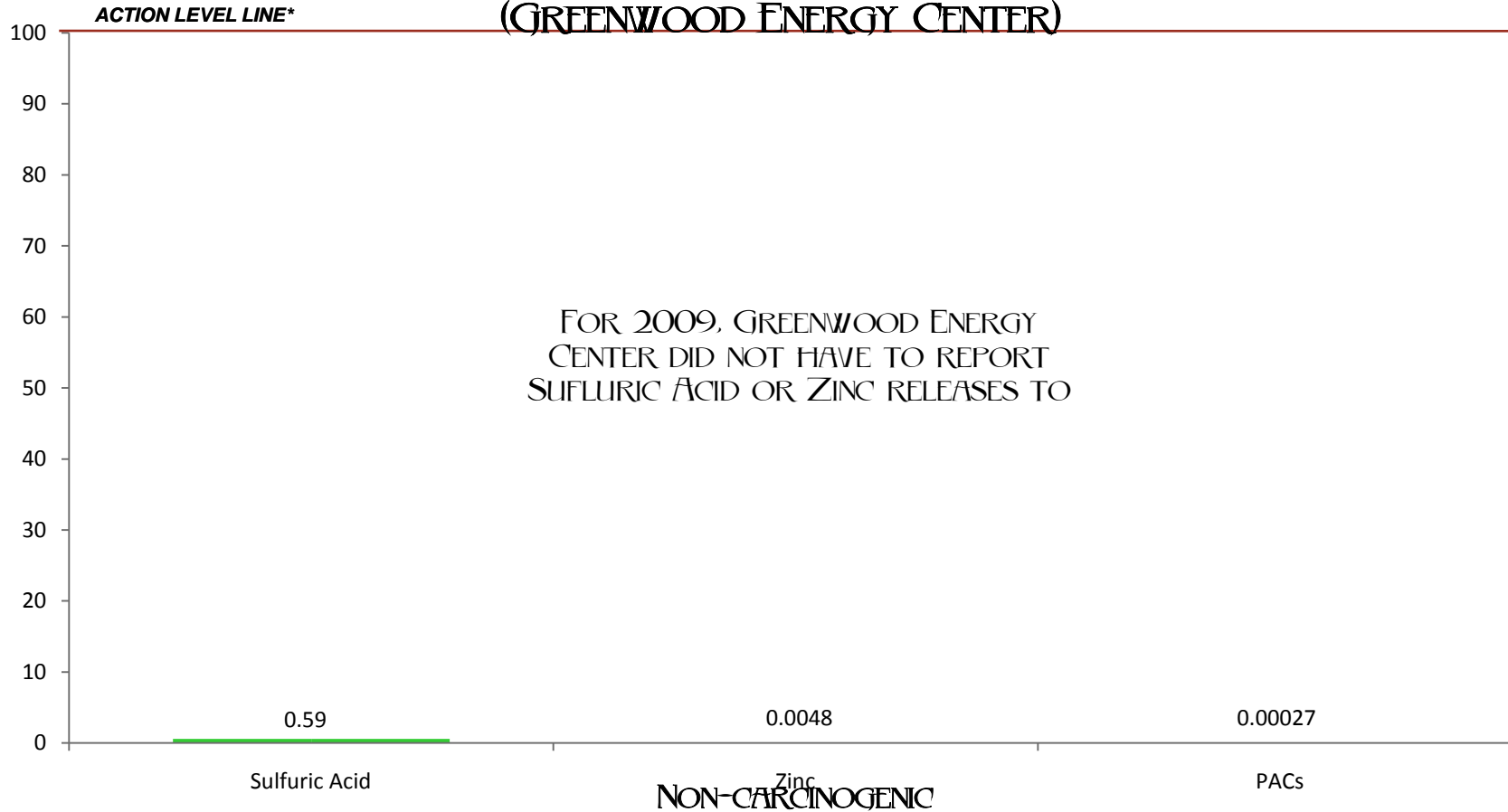
* This line represents the level at which state and federal regulators may take some action to control emissions through permitting. The most sensitive individuals - pregnant women, children, the elderly - may have a reaction at levels varying from one to thousands of times greater than this level. Because action levels are different for each chemical, we chose to represent our concentrations as a percent of the "action level line".

GREENWOOD ENERGY CENTER

TRI Chemical	Total	Air (Pounds Emitted)	Land (Pounds Managed)	Water (Pounds Discharged)
Benzo(g,h,i)perylene	0	0	0	0
PACs ¹	0.01	0.01	0	0
Sulfuric acid	Not Reportable	NA	NA	NA
TOTAL TRI	0.01			

¹ PACs = Polycyclic Aromatic Compounds

COMPARISON OF THIS YEAR'S MODELED GROUND LEVEL CONCENTRATIONS TO ACTION LEVELS (GREENWOOD ENERGY CENTER)

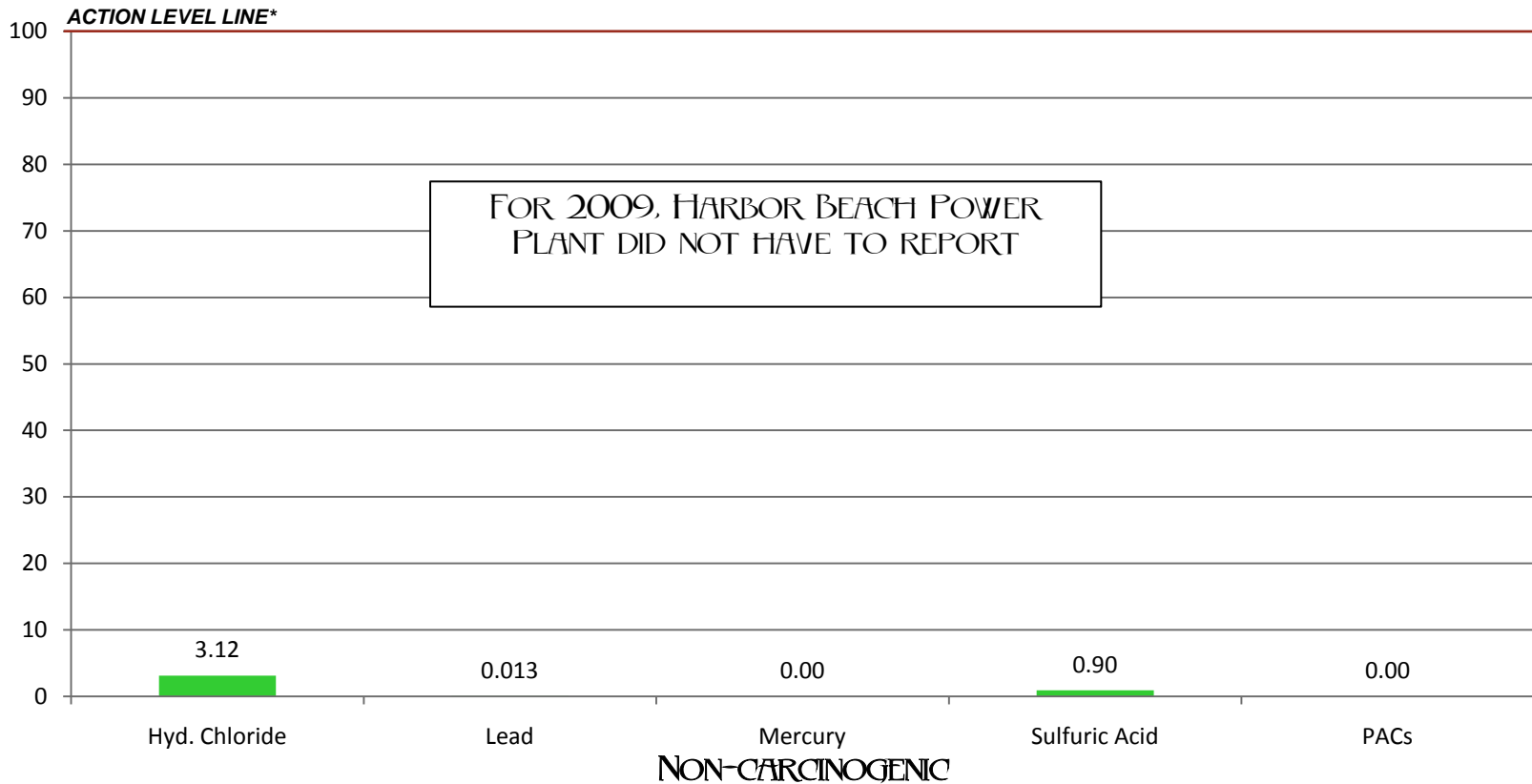


* This line represents the level at which state and federal regulators may take some action to control emissions. The most sensitive individuals - pregnant women, children, the elderly - may have a reaction at levels varying from one to thousands of times greater than this level. Because action levels are different for each chemical, we chose to represent our concentrations as a percent of the "action level line".

HARBOR BEACH POWER PLANT

TRI Chemical	Total	Air (Pounds Emitted)	Land (Pounds Managed)	Water (Pounds Discharged)
Hydrogen chloride	150,000	150,000	NA	NA
Lead	817.56	10.38	806.68	0.50
Sulfuric acid	11,000	11,000	NA	NA
TOTAL TRI	161,818			

COMPARISON OF THIS YEAR'S MODELED GROUND LEVEL CONCENTRATIONS TO ACTION LEVELS (HARBOR BEACH POWER PLANT)



* This line represents the level at which state and federal regulators may take some action to control emissions. The most sensitive individuals - pregnant women, children, the elderly - may have a reaction at levels varying from one to thousands of times greater than this level. Because action levels are different for each chemical, we chose to represent our concentrations as a percent of the "action level line."

MONROE POWER PLANT

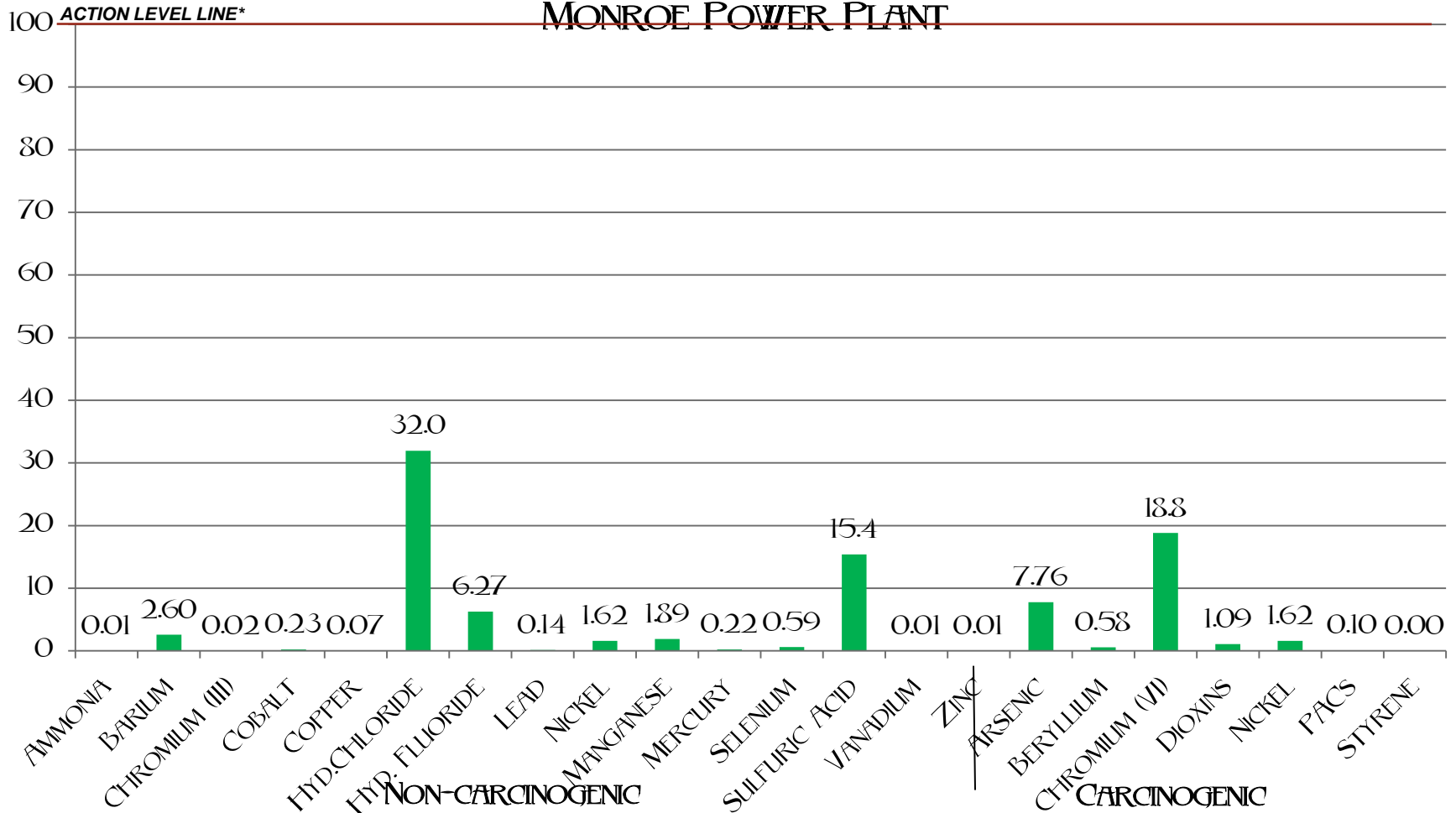
TRI Chemical	Total	Air (Pounds Emitted)	Land (Pounds Managed)	Water (Pounds Discharged)
Ammonia	14,680	14,400	0	280
Arsenic	50,840	440	48,000	2,400
Barium	3,722,600	8,600	3,700,000	14,000
Benzo(g,h,l)perylene	0.79	0.28	0.51	0
Beryllium	12,069	32	12,000	37
Chromium	122,440	940	120,000	1,500
Cobalt	65,366	300	65,000	74
Copper	201,340	880	200,000	460
Dioxin ¹	1.3680	1.3680	0	0
Hydrogen chloride	8,200,000	8,200,000	NA	NA
Hydrogen fluoride	460,000	460,000	NA	NA
Lead	65,295.09	593.94	64,636.40	64.75
Manganese	161,821	1,211	160,000	610
Mercury	1,202.00	848.16	318.35	35.49
Nickel	99,040	940	97,000	1,100
PACs ²	60.09	7.09	53.00	0
Selenium	21,400	7,700	9,600	4,100
Sulfuric acid	1,000,000	1,000,000	NA	NA
Vanadium	277,500	1,000	270,000	6,500
Zinc	143,310	2,800	140,000	510
TOTAL TRI	14,618,973			

¹Dioxin emissions are reported to the EPA in grams

²PACs = Polycyclic Aromatic Compounds

COMPARISON OF THIS YEAR'S MODELED GROUND LEVEL CONCENTRATIONS TO ACTION LEVELS

MONROE POWER PLANT



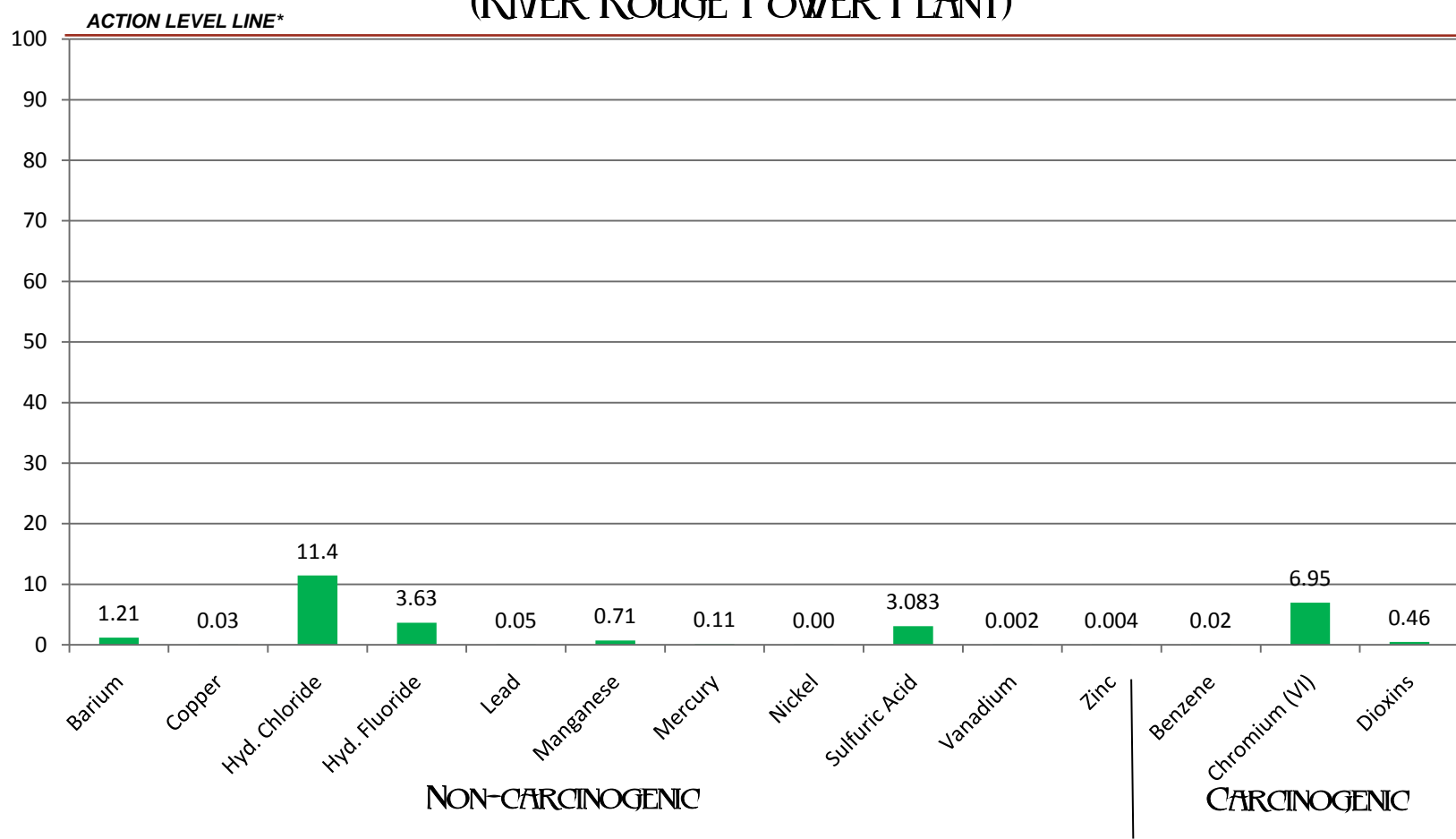
* This line represents the level at which state and federal regulators may take some action to control emissions. The most sensitive individuals - pregnant women, children, the elderly - may have a reaction at levels varying from one to thousands of times greater than this level. Because action levels are different for each chemical, we chose to represent our concentrations as a percent of the "action level line".

RIVER ROUGE POWER PLANT

TRI Chemical	Total	Air (Pounds Emitted)	Land (Pounds Managed)	Water (Pounds Discharged)
Barium	771,710	1,500	770,000	210
Benzene	120	120	0	0
Chromium	19,130	130	19,000	0
Copper	35,132	130	35,000	2
Dioxin ¹	0.2170	0.2170	0	0
Hydrogen chloride	1,100,000	1,100,000	NA	NA
Hydrogen fluoride	100,000	100,000	NA	NA
Lead	10,780.06	83.58	10,696.30	0.18
Manganese	29,170	170	29,000	0
Mercury	214.59	153.34	61.25	0
Sulfuric acid	75,000	75,000	NA	NA
Vanadium	43,140	140	43,000	0
Zinc	31,470	470	31,000	0
TOTAL TRI	2,215,867			

¹Dioxin emissions are reported to the EPA in grams

COMPARISON OF MODELED MAXIMUM GROUND LEVEL CONCENTRATIONS TO ACTION LEVELS (RIVER ROUGE POWER PLANT)



* This line represents the level at which state and federal regulators may take some action to control emissions. The most sensitive individuals - pregnant women, children, the elderly - may have a reaction at levels varying from one to thousands of times greater than this level. Because action levels are different for each chemical, we chose to represent our concentrations as a percent of the "action level line".

ST. CLAIR POWER PLANT

TRI Chemical	Total	Air (Pounds Emitted)	Land (Pounds Managed)	Water (Pounds Discharged)
Arsenic Compounds	13,120	77	13,000	43
Barium Compounds	2,808,800	4,200	2,800,000	4,600
Benzo(g,h,i)perylene	0.27	0.11	0.16	0.00
Chromium Compounds	29,370	180	29,000	190
Copper Compounds	50,266	180	50,000	86
Dioxin ¹ -like Compounds	0.5292	0.5292	0	0
Hydrogen chloride	960,000	960,000	NA	NA
Hydrogen fluoride	130,000	130,000	NA	NA
Lead Compounds	11,308.00	75.72	11,210.80	21.48
Manganese Compounds	81,466	336	81,000	130
Mercury Compounds	395.20	280.13	114.72	0.35
Nickel Compounds	19,254	190	19,000	64
PACs ²	29.51	2.73	26.78	0
Polychlorinated Biphenyls ³	0	NA	NA	NA
Sulfuric acid	160,000	160,000	NA	NA
Vanadium Compounds	70,300	190	70,000	110
Zinc Compounds	45,756	670	45,000	86
TOTAL TRI	4,380,066			

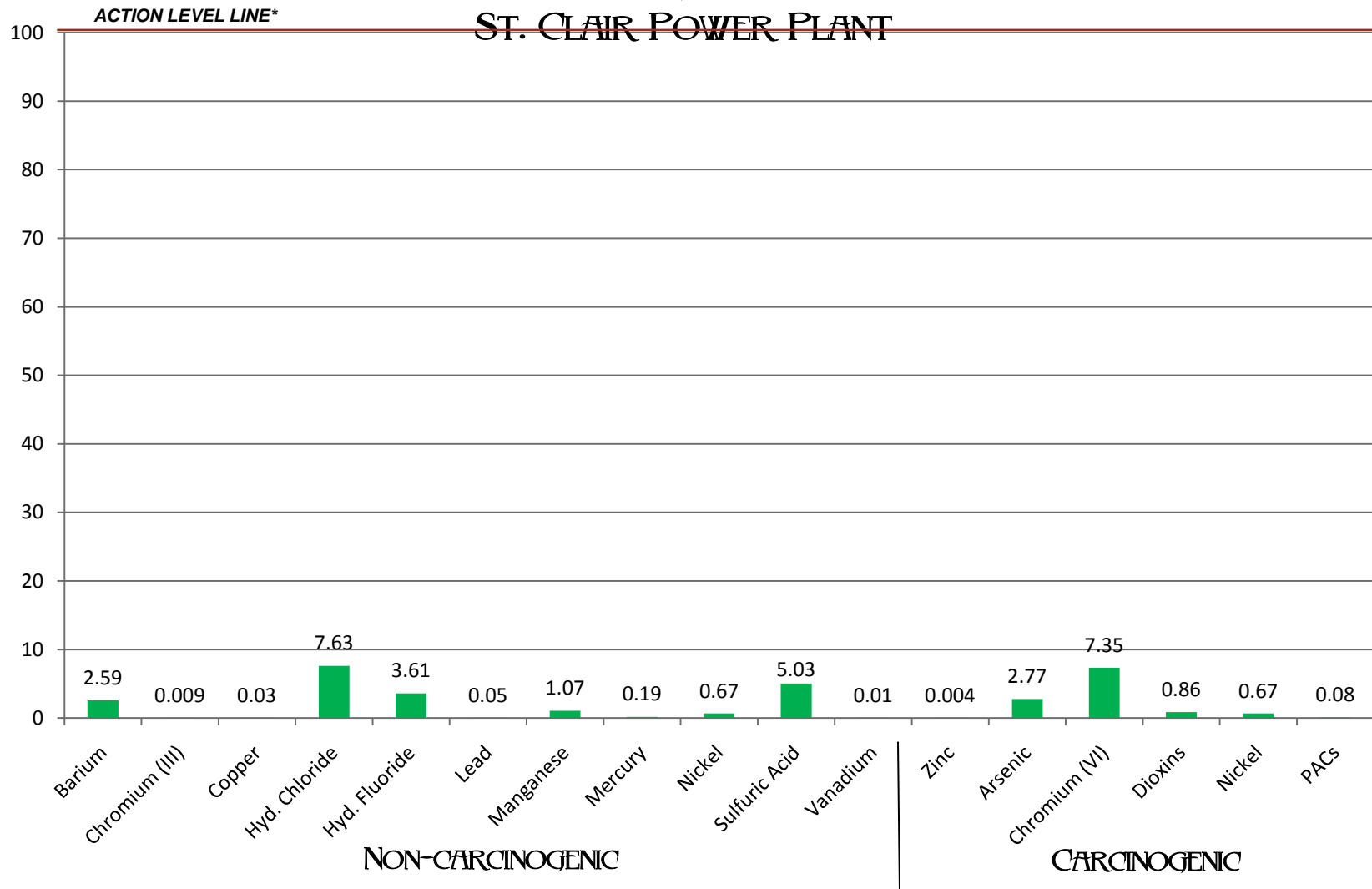
¹ Dioxin emissions are reported to the EPA in grams

² PACs = Polycyclic Aromatic Compounds

³ PCB use was greater than TRI threshold, but was not released to the environment

COMPARISON OF MODELED MAXIMUM GROUND LEVEL CONCENTRATIONS TO ACTION LEVELS

ST. CLAIR POWER PLANT



* This line represents the level at which state and federal regulators may take some action to control emissions. The most sensitive individuals - pregnant women, children, the elderly - may have a reaction at levels varying from one to thousands of times greater than this level. Because action levels are different for each chemical, we chose to represent our concentrations as a percent of the "action level line".

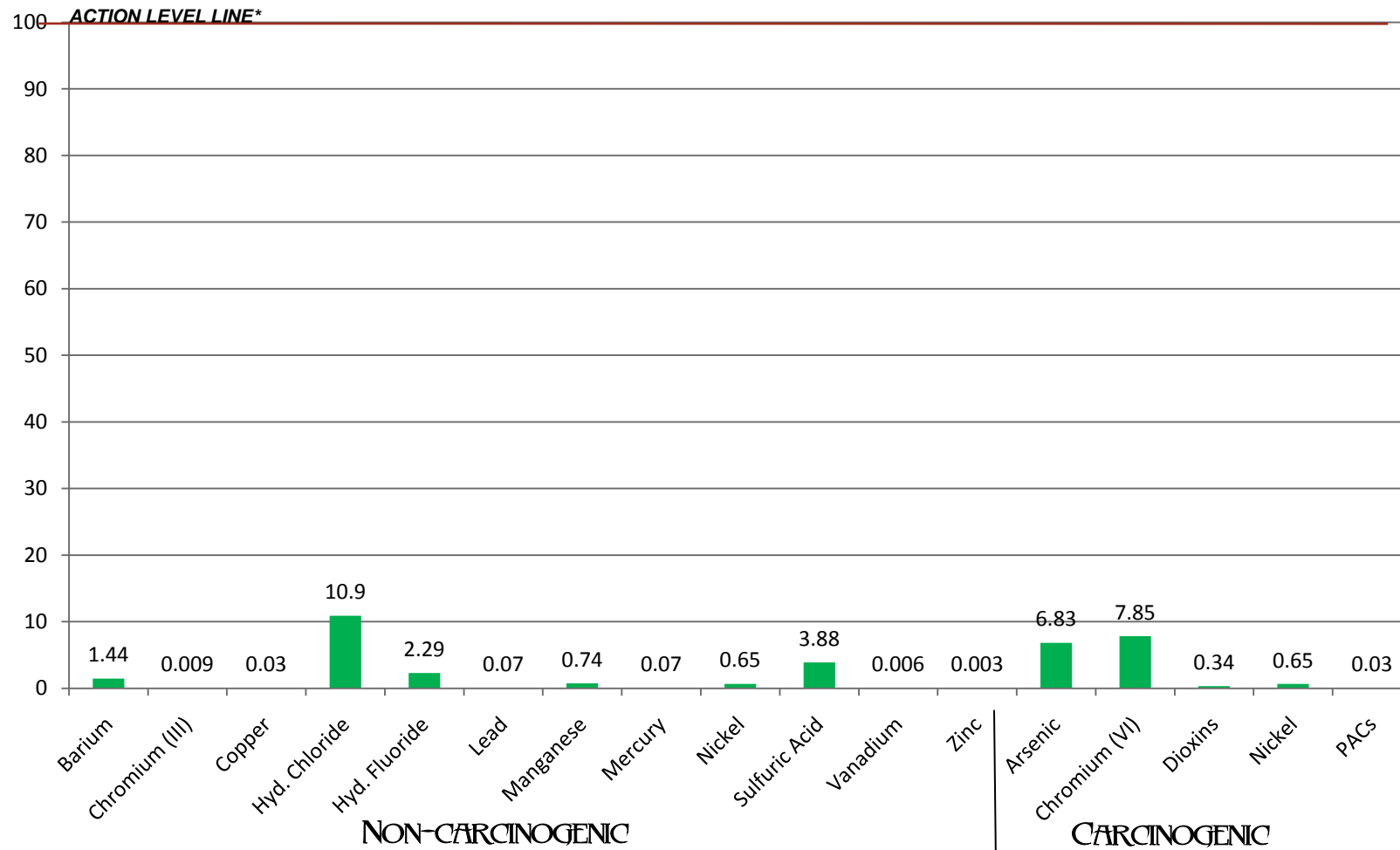
TRENTON CHANNEL POWER PLANT

TRI Chemical	Total	Air (Pounds Emitted)	Land (Pounds Managed)	Water (Pounds Discharge)
Barium	844,300	3,400	840,000	900
Benzo(g,h,i)perylene	4.32	0.06	4.26	0
Chromium	26,480	280	26,000	200
Copper	42,250	250	42,000	0
Dioxin ¹	0.3019	0.3019	0	0
Hydrogen chloride	2,000,000	2,000,000	NA	NA
Hydrogen fluoride	120,000	120,000	NA	NA
Lead	15,302.74	210.83	15,091.91	0
Manganese	34,340	340	33,000	1,000
Mercury	276.99	185.28	91.70	0.01
Nickel	21,312	270	21,000	42
PACs ²	390.01	1.56	388.45	0
Sulfuric acid	180,000	180,000	NA	NA
Vanadium	59,740	340	59,000	400
Zinc	32,680	780	30,000	1,900
TOTAL TRI	3,392,416			

¹ Dioxin emissions are reported to the EPA in grams

² PACs = Polycyclic Aromatic Compounds

Comparison of Modeled Maximum Ground Level Concentrations to Action Levels Trenton Channel Power Plant



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