

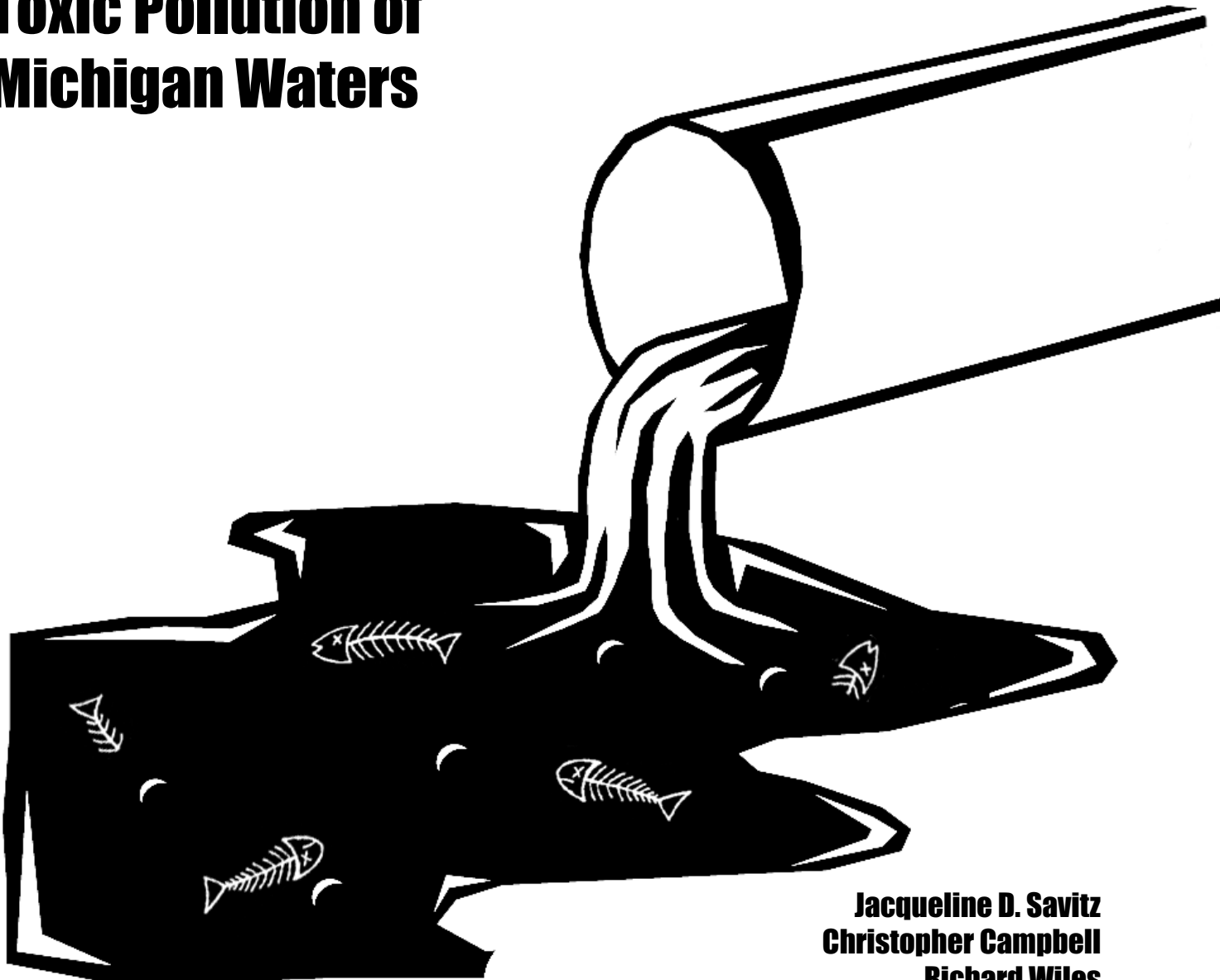


The State PIRGs



Dishonorable Discharge

Toxic Pollution of Michigan Waters



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Toxic Pollution of Michigan Waters

Executive Summary

Most Michigan citizens would be surprised to learn that scores of businesses and facilities across the state *legally* dump tons of toxic chemicals into the state's rivers, streams, lakes, and bays. Many of these same polluters flush millions more pounds of toxic substances down the drain to sewage treatment plants that taxpayers pay to operate and maintain. None of the toxic chemicals sent to publicly financed sewage treatment systems are reported as pollution by the EPA, even though a great deal of the toxic load eventually finds its way to Michigan streams and rivers.

The citizens of Michigan have a right to know about any pollution of their water, air or land that may pose a risk to human health or the environment. The goal of *Dishonorable Discharge* is to inform the public about the massive level of toxic pollution of the waters in their state, and point out the need for more comprehensive reporting of toxic chemical use, transport, and pollution, in Michigan and nationwide.

Factories and other industrial facilities dumped more than 4.1 million pounds of toxic substances directly into Michigan's waters between 1990 and 1994, according to a new analysis of the federal Toxics Release Inventory (TRI) (Table 1). Michigan ranked 25th among the states in toxic water pollution reported over those five years. Because of weaknesses and loopholes in federal pollution laws, most, if not all of these toxic discharges are perfectly legal.

As large as they are, these figures substantially underestimate toxic releases to waters and the environment because the TRI requires reporting of only about 340 of the 73,000 chemicals in commerce. The TRI also exempts certain industries from reporting, including utilities, sewage treatment plants, municipal incinerators, and manufacturing facilities with fewer than ten employees.

In addition, over sixty (63.3) million pounds of toxic materials were flushed to sewage treatment plants in Michigan from 1990 through 1994, 10th in the nation (Table 1.) EPA estimates that twenty-five percent of all discharges nationwide flow through sewage treatment plants untreated (EPA 1995). Applying this 25 percent estimate to Michigan raises the total amount of toxics dumped to the state's waters to an estimated 20 million pounds (Table 1).

The Detroit River received the greatest amount of toxic water pollution in Michigan from 1990-1994, a total of 1,450,000 pounds, followed by the Upjohn Pond, the Pine River, and Portage Creek (Table 2). The ten most polluted waterways in Michigan received 3,740,000 pounds of toxic pollution between 1990 and 1994, 90.8% percent of the total in the State.

The top three facilities reporting the most toxic pollution of Michigan's waters over this period were Upjohn Company in Portage, which dumped 1,270,000 pounds of

toxic chemicals, followed by National Steel Corporation, and Total Petroleum Inc. in the towns of Ecorse, and Alma, respectively (Table 3). The toxic chemicals dumped in the greatest amounts were methanol, a total of 1,360,000 pounds, followed by ammonia, and diethanolamine (Table 4).

BASF Corporation* dumped the most carcinogens into Michigan's waters, a total of 66,800 pounds, followed by Dow Chemical USA and National Steel Corporation (Table 8). The Detroit River received the greatest amount of cancer-causing toxic chemicals in Michigan, a total of 90,000 pounds, followed by the Tittabawassee River and the Upjohn Pond (Table 7).

National Steel Corporation dumped the greatest amount of persistent toxic metals in Michigan's waters, a total of 356,000 pounds, followed by Mclouth Steel and Sturgis Foundry Corporation (Table 8). The Detroit River received the greatest amount of persistent toxic metals, a total of 439,000 pounds, followed by the Rouge River and the Kalamazoo River (Table 7).

Ford Motor Company* dumped the greatest amount of toxic chemicals that cause reproductive damage or birth defects into Michigan's waters, a total of 77,000 pounds, followed by Metalloy Hudson Foundry and Rouge Steel Company (Table 8). The Congdon Drain received the greatest amount of toxic chemicals that cause reproductive damage or birth defects, a total of 77,000 pounds, followed by Bean Creek and the Rouge River (Table 7).

These discharges to Michigan's waters include only those wastes released by companies physically located in Michigan. Many waterways receive additional pollution from sources outside of the state. Information on toxic water pollution in other states can be found in EWG's state reports series, and in the national report, *Dishonorable Discharge*.

Recommendations

Americans have a right to know about any use, transport, or release of toxic substance in their communities that might pose a risk to human health or the environment. Required reporting under the TRI provides only a small portion of this information. Much more complete reporting is needed. Americans also have a right to know about toxic chemicals in the products they buy that may pose a risk to them and their children.

Full accounting of the use of toxic materials reveals many low cost opportunities for pollution prevention. In New Jersey, state officials estimate that every dollar spent on such materials accounting practices generates five to eight dollars in increased efficiency (GAO 1994). Without materials accounting industry will miss many opportunities for substantial low cost reductions in pollution, and the public and policy makers will be unable formulate strategies that most effectively reduce exposure to toxic substances in the environment and consumer products.

We recommend:

- Timely implementation of the EPA's proposed expansion of industries and facilities required to report toxic releases under the TRI.
- Expansion of TRI reporting requirements to include full materials accounting for any facility or industry that uses or releases a toxic substance that may pose a risk to human health and the environment.

*This facility reported no discharges in 1994, and may also have reported zero discharges for other years.

Dishonorable Discharge

Toxic pollution of rivers, lakes, streams, and bays is a serious problem in all 50 states. Twenty five years after the passage of the Clean Water Act, nearly forty (40) percent of America's rivers, lakes, and coastal waters remain unsafe for fishing, swimming or basic recreation (EPA 1996b). In Michigan, all 3,200 miles of Great Lakes and nearly 25,000 acres of other lakes surveyed had elevated levels of toxic chemicals (EPA 1995b). The pollution that fouls these waterways costs the state's economy millions of dollars in tourism, fishing, and development revenues that otherwise could be earned on or near these waters were they not so polluted (EPA 1996b).

***Dishonorable Discharge* Underestimates Toxic Pollution**

The Toxics Release Inventory (TRI) provides a rough estimate of a small portion of the toxic chemicals that flow into America's waters. The toxic discharges reported in this study are based on TRI reported toxic releases to waterways and so-called "transfers" of toxics to publicly owned treatment works (POTWs) — the term of art that industry and the EPA use when an industrial facility dumps toxic chemicals into the local sewer.

The figures reported in *Dishonorable Discharge* dramatically underestimate the total amounts of toxic compounds that have been discharged, dumped, or made their way into rivers and lakes across the country over the past five years.

About 90¹ percent of all toxic discharges coming out of pipes into water (so-called point source discharges) are not reported to the TRI. This is because the TRI requires reporting on only about 343² of some 73,000 chemicals used in commerce, and because the TRI exempts many polluters (utilities, certain industries, and those with fewer than ten employees) from reporting requirements (EPA 1996).

About half of all toxics that pollute rivers come from surface runoff and air deposition, as opposed to pipes. Comprehensive accounting of this "nonpoint source" pollution is not available for all rivers on a national basis.

Taking all of the limitations of the existing information into account, Environmental Working Group believes that an accurate estimate of the total load of toxic pollution in many rivers and lakes over the past five years might be 20 times greater than the amounts reported here.

Hiding Toxics in the Sewer

The EPA does not include so-called "transfers" of toxic chemicals to sewer systems as an official "release" of a toxic chemical into the environment (EPA 1996). At the same time, the EPA estimates that 25 percent of all toxic chemicals transferred to sewers from industrial facilities pass through treatment and into the waterways that receive wastewater (EPA 1995).

Transfers of toxic chemicals to publicly owned treatment works (POTWs) — otherwise known as sewage treatment plants — were four times greater in 1994 than the amount of toxic chemicals released directly to water that are reported in the entire TRI that year. To estimate the total amounts of toxic substances dumped into Michigan's waters, we used EPA's assumption that 25 percent of all toxic chemicals transferred to POTWs pass-through untreated³. Table 1 presents the EWG estimate of toxic chemicals assumed to be discharged by the POTWs in Michigan. Estimates of toxic discharges from POTWs to specific rivers and bodies of water could not be accurately estimated because the sewage treatment plants are not required to report to the TRI.

Assuming a 25 percent flow-through also does not permit discharge estimates for individual toxic chemicals that flow through the sewer system into waterways. In reality some chemicals flow through POTW's untouched, while others are removed and held in the sludge, broken down in treatment, or allowed to evaporate into the ambient air as toxic pollutants.

How Toxic is Toxic?

Some 340 substances were required to be reported to the EPA for the years analyzed in this report. According to the EPA:

“For a chemical or chemical category to remain on or be added to the TRI list, it must be known to cause or reasonably be anticipated to cause one of the following:

- Significant adverse acute health effects at concentration levels that are reasonably likely to exist beyond facility boundaries as a result of continuous, or frequently recurring releases;
- In humans — cancer; teratogenic effects; or serious irreversible reproductive dysfunction, neurologic disorders, heritable genetic mutations, or other chronic health effects;
- A significant adverse effect on the environment because of its toxicity, its toxicity and persistence in the environment, or its toxicity and tendency to bioaccumulate in the environment of sufficient seriousness to warrant reporting under EPCRA section 313” (EPA 1996).

For most of the TRI chemicals, federal regulators and scientists have a disturbingly incomplete understanding of the long term toxic effects on the environment or human health. The vast majority of compounds reported in the TRI are not fully studied, even though they have triggered one of the above criteria.

Toxic discharges and runoff to water are a serious and largely unaddressed environmental and human health problem. Most, if not all of the pollution reported in Dishonorable Discharge is legal. Current pollution control laws like the Clean Water Act (CWA), the Resource Conservation and Recovery Act (RCRA), and the Toxic Substances Control Act (TSCA) do little to move the nation towards reducing the toxic pollution cited in this report. In effect, these laws issue pollution licenses or exemptions from regulations.

One of the more glaring exemptions may be the so-called “domestic sewage exclusion” under RCRA, whereby toxic contaminants sent to sewage treatment plants escape otherwise applicable federal hazardous waste regulations. This accounts for the huge amounts of toxic chemicals that were dumped down the drain by American industry and end up in the nation’s rivers and streams. Another major source of toxic pollution of waters is agricultural pesticides. The runoff of pesticides from agricultural fields is not regulated under any federal law, and is not tabulated by the TRI nor included in this report. About 1.1 billion pounds⁴ of pesticides were used in the United States in 1993 alone (Aspelin 1994).

Dishonorable Discharge is based on data collected by the U.S. Environmental Protection Agency’s Toxics Release Inventory (TRI) for the reporting years 1990 through 1994, which includes the most recent data available. It includes the releases of only 343 chemicals from about 27,000 manufacturing facilities. The limitations of these data have been described above.

Analyzing Discharges by Body of Water

Discharges from TRI facilities were assigned to a given waterway based on the “receiving stream” reported to the EPA. Most waterways reported as “tributary” streams were included with their respective rivers in this report when it was possible to link them. For purposes of this analysis, toxic release data for major rivers themselves are tabulated separately, not summed as part of larger watersheds. For example, a “Tributary to the Mississippi River” was counted as Mississippi River, while the Missouri River was not, even though it eventually joins the Mississippi just above St. Louis. Small streams receiving large quantity discharges (such as Gravelly Run in Virginia and Clear Creek in Colorado) were reported individually, just as they are recorded in the TRI. State-level reports only include discharges to a given river from facilities that are physically located in this state, not discharges from facilities located in other states upstream.

Reporting Toxics Dumped Down the Drain

Enormous quantities of toxic chemicals are discharged to waterways via sewer systems. These so-called “transfers” of toxic chemicals to publicly owned treatment works (POTWs) totaled more than 250 million pounds in 1994, compared to 66 million pounds of direct discharges to waters reported in that same year. While the EPA does not count these transfers as environmental releases in the TRI, the Agency estimates that an average of 25 percent of these transfers flow through sewer systems into receiving waters (EPA 1995).

To better illustrate the amount of toxic chemicals that actually make it into the nation’s waters each year, we assumed that on average 25 percent of the toxic chemicals transferred to POTWs (a.k.a. sewers) by a reporting facility, ultimately pass through the sewage treatment plant untreated and in most cases are discharged to receiving waters.

Toxic chemical releases through POTWs were estimated statewide, but were not attributed to specific rivers at the state level due to the difficulty of verifying the receiving waters. Environmental Working Group will attempt to identify receiving waters more precisely future reports. All other analyses including facility discharges and top chemicals reflect direct discharges only, and not POTW release estimations.

Total discharges of persistent toxic metals, known or possible carcinogens, and chemicals known to cause reproductive effects, were calculated for specific rivers

based on information characterizing the toxic properties of these substances previously published by the EPA, the State of California, and the State of New Jersey, as well as other toxicological literature (Environmental Protection Agency, 1996; California Code of Regulations; New Jersey Department of Health; and Dixon, 1986). EPA's inclusion of known, probable, and possible carcinogens is based on determinations made by the Occupational Safety and Health Administration (OSHA), the National Toxicology Program (NTP), and the International Agency for Research on Cancer (IARC) (EPA 1996). Lists of chemicals included are found in the Appendix.

Notes

¹Estimate based on EPA report (National Sediment Contaminant Point Source Inventory: Analysis of Release Data for 1992. Final Draft.) (EPA, 1995) where data from TRI were compared to the Permit Compliance System (PCS) Database and found to represent only about 9%, at most, of discharges reported in PCS. Estimates from the GAO indicate that PCS regulates only 23% of all toxic water pollution (GAO, 1994).

²The exact number of chemicals required varies with the year. In 1994, 343 chemicals were reported. EPA has recently expanded the inventory to include about 650. These data, to be reported for 1995, will be available in 1997.

³EPA uses this factor since it is unlikely to greatly overestimate or underestimate the exact treatment efficiency (EPA 1995). This number will vary for any specific chemical; however it estimates pass through for chemicals as a whole, and is not applied to specific chemicals in this report.

⁴This value refers to pesticide active ingredients. The total volume of pesticide products, including so-called inert ingredients is far higher.

Appendix

Carcinogens

1,1,2,2-Tetrachloroethane	beta-Propiolactone	Michler's ketone
1,1-Dimethylhydrazine (UDMH) (alar trans. prod.)	Bis (2-chloroethyl) ether	Mustard Gas
1,2-Dibromo-3-chloropropane (DBCP)	Bis(chloromethyl) ether	N-Nitroso-N-ethylurea
1,3-Butadiene	Bromodichloromethane	N-Nitroso-N-methylurea
1,3-Dichloropropylene	Bromoform	N-Nitrosodi-n-butylamine
1,3-Propane sultone	Cadmium	N-Nitrosodi-n-propylamine
1,4-Dioxane	Cadmium compounds	N-Nitrosodiethylamine
1-Amino-2-methylantraquinone	Captan	N-Nitrosodimethylamine
1-Naphthylamine	Carbon tetrachloride	N-Nitrosodiphenylamine
2,4,6-Trichlorophenol	Chlordane	N-Nitrosomethylvinylamine
2,4-Diaminoanisole	Chloroethane (Ethyl chloride)	N-Nitrosomorpholine
2,4-Diaminoanisole sulfate	Chloroform	N-Nitrososarcosine
2,4-Diaminotoluene	Chloromethyl methyl ether	N-Nitrosopiperidine
2,4-Dinitrotoluene	Chlorophenols	Nickel
2-Acetylaminoanthraquinone	Chloroethanol	Nickel compounds
2-Aminoanthraquinone	Chromium	Nitrotriacetic acid
2-Methylaziridine (Propyleneimine)	Cupferron	Nitrofen
2-Naphthylamine	D&C Red No. 19	Nitrogen mustard (Mechlorethamine)
2-Nitropropane	DDVP (Dichlorvos)	ortho-Anisidine
3,3'-Dichlorobenzidine	Di-(2-ethylhexyl)phthalate	ortho-Anisidine hydrochloride
3,3'-Dimethoxybenzidine (ortho-Dianisidine)	Dichloromethane (Methylene chloride)	ortho-Toluidine
3,3'-Dimethylbenzidine	Diepoxybutane	ortho-Toluidine hydrochloride
4,4'-Diaminodiphenyl ether (4,4'-Oxydianiline)	Diethyl sulfate	p-Aminoazobenzene
4,4'-Methylene bis(2-chloroaniline)	Dimethyl sulfate	p-Cresidine
4,4'-Methylene bis(N,N-dimethyl) benzenamine	Dimethylcarbamoyl chloride	p-Dichlorobenzene
4,4'-Methylenedianiline	Direct Black 38	p-Nitrosodiphenylamine
4,4'-Thiodianiline	Direct Blue 6	Pentachlorophenol
4-Aminobiphenyl (4-aminodiphenyl)	Direct Brown 95	Polybrominated biphenyls
4-Dimethylaminoazobenzene	Epichlorohydrin	Polychlorinated biphenyls
4-Nitrobiphenyl	Ethyl acrylate	Propylene oxide
5-Nitro-o-anisidine	Ethylene dibromide	Saccharin
Acetaldehyde	Ethylene dichloride (1,2-Dichloroethane)	Safrole
Acetamide	Ethylene oxide	Styrene
Acrylamide	Ethylene thiourea (EBDC trans prod.)	Styrene oxide
Acrylonitrile	Ethyleneimine	Tetrachloroethylene (Perchloroethylene)
Allyl chloride	Formaldehyde	Thioacetamide
Aniline	Hexachlorobenzene	Thiourea
Arsenic	Hexachloroethane	Toluene-2,4-diisocyanate
Arsenic compounds	Hexamethylphosphoramide	Toluene-2,6-diisocyanate
Asbestos	Hydrazine	Toxaphene (Polychlorinated camphenes)
Auramine	Hydrazine sulfate	Trichloroethylene
Benzene	Hydrazobenzene (1,2-Diphenylhydrazine)	Tris(2,3-dibromopropyl)phosphate
Benzidine [and its salts]	Isosafrole	Urethane (Ethyl carbamate)
Benzotrichloride	Lead	Vinyl bromide
Benzyl chloride	Lead compounds	Vinyl chloride
Beryllium and beryllium compounds	Lindane	Vinyl trichloride (1,1,2-Trichloroethane)
Beryllium compounds	Methyl iodide	

Persistent Toxic Metals

Antimony & Antimony Compounds
Arsenic & Arsenic Compounds
Barium & Barium Compounds
Beryllium & Beryllium Compounds
Cadmium & Cadmium Compounds
Chromium & Chromium Compounds
Cobalt & Cobalt Compounds
Copper & Copper Compounds
Lead & Lead Compounds
Manganese & Manganese Compounds
Mercury & Mercury Compounds
Nickel & Nickel Compounds
Selenium & Selenium Compound
Silver & Silver Compounds
Thallium & Thallium Compounds
Zinc & Zinc Compounds

Chemicals that Affect Reproduction

1,2-Dibromo-3-chloropropane
Cadmium
Carbon disulfide
Diethylhexyl phthalate
o-Dinitrobenzene
m-Dinitrobenzene
p-Dinitrobenzene
Ethylene glycol monoethyl ether
Ethylene glycol monomethyl ether
Ethylene oxide
Hexamethylphosphoramide
Lead
Styrene
Toluene
Trichloroethylene
Xylene(mixed isomers)
o-xylene
m-xylene
p-xylene
Di-n-butyl phthalate
Glycol ethers
Mercury Compounds
Mercury
Benzene
Aluminum
Arsenic
Nickel
Lindane
Vinyl Chloride

Source: Environmental Working Group. Compiled from California Proposition 65, EPA's TRI Public Data Release, New Jersey Department of Health, Hazardous Substances Fact Sheets, and Toxic Responses of the Reproductive System (Dixon 1986).

References

Aspelin, A.L. 1994. Pesticides Industry Sales and Usage: 1992 and 1993 Market Estimates. EPA, Washington, DC.

California Code of Regulations, Title 22. Chapter 3. Safe Drinking Water and Toxic Enforcement Act of 1986. Social Security, S 12000, Chemicals Known to the State to Cause Cancer or Reproductive Toxicity.

Dixon, R. L. 1986. Toxic Responses of the Reproductive System. In: Casarett and Doull's Toxicology: The Basic Science of Poisons, Third Edition. C.D. Klaassen, M.O. Amdur, and J. Doull, Eds. Macmillan Publishing Company, New York. pp. 432-477.

Environmental Protection Agency. 1995. National Sediment Contaminant Point Source Inventory: Analysis of Release Data for 1992. Final Draft, March 22, 1995.

Environmental Protection Agency. 1995b. National Water Quality Inventory: 1994 Report to Congress. EPA841-R-95-005. 497pp.

Environmental Protection Agency. 1996. 1994 Toxics Release Inventory, Public Data Release. Office of Pollution Prevention and Toxics. EPA 745-R-96-002.

Environmental Protection Agency. 1996b. Liquid Assets: A Summertime Perspective on the Importance of Clean Water to the Nation's Economy. 800-R-96-002.

Federal Register Notice, (June 27, 1996) 40 CFR Part 372. Addition of Facilities in Certain Industry Sectors; Toxic Chemical Release Reporting; Community Right-to-Know; Proposed Rule. pp.33588-33618.

New Jersey Department of Health. Right to Know Program. Hazardous Substances Fact Sheets.

Office of Technology Assessment, 1989. Statement before the Subcommittee on Superfund, Ocean and Water Protection, Committee on Environment and Public Works, United States Senate, May 10, 1989. (As cited in Federal Register Notice, (June 27, 1996) 40 CFR Part 372. Addition of Facilities in Certain Industry Sectors; Toxic Chemical Release Reporting; Community Right-to-Know; Proposed Rule. pp.33588-33618.)

United States Department of the Interior, Fish and Wildlife Service and U.S. Department of Commerce, Bureau of the Census. 1993. 1991 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. U.S. Government Printing Office, Washington, DC.

United States Government Accounting Office. 1991. EPA's Toxics Release Inventory is Useful but Can Be Improved. GAO/RCED-91-121. 89pp.

United States Government Accounting Office. 1994. Poor quality assurance and limited pollutant coverage undermine EPA's Control of Toxic Substances. GAO/PEMD-94-9. 87pp.

Michigan

Toxic pollution of Michigan waters (1990-1994)

Table 1. Total reported toxic pollution of Michigan waters (1990-1994).

Direct Water Discharges	4,122,322 Pounds
Estimated Sewer Discharges‡	15,836,554 Pounds
Total Discharges to Waters	19,958,876 Pounds

Table 2. Michigan waters receiving the greatest amounts of toxic pollution (1990-1994).

River or Water Body	Toxic chemical release to waterbody (pounds)
Detroit River	1,449,750
Upjohn Pond	959,459
Pine River	315,223
Portage Creek	306,855
Lake Huron	190,546
Rouge River	151,375
Tittabawassee River	118,560
Congdon Drain	89,706
Monguagon Creek	81,884
Menomonee River	79,048

Table 3. Polluters reporting the greatest amounts of toxic chemicals discharged to Michigan waters (1990-1994).

Facility	City	Toxic chemical release to waters (pounds)
Upjohn Co.	Portage	1,266,314
National Steel Corp.	Ecorse	1,063,385
Total Petroleum Inc.	Alma	315,223
McClouth Steel	Trenton	193,575
ABTCO Inc.	Alpena	190,567
Elf Atochem N.A. Inc.	Riverview	137,568
Dow Chemical USA	Midland	118,560
Rouge Steel Co.	Dearborn	113,220
Monsanto Co.	Trenton	91,380
Ford Motor Co.*	Wixom	89,706

Table 4. Toxic chemicals discharged in the greatest amounts to Michigan waters (1990-1994).

Chemical	Toxic chemical release to waters (pounds)
Methanol	1,359,273
Ammonia	1,262,667
Diethanolamine	281,417
Zinc compounds	234,296
Ethylene glycol	139,466
Antimony	92,005
Manganese	87,550
Glycol ethers	81,303
Ethylene	78,162
Propylene oxide	72,300

Table 5. Polluters reporting the greatest amounts of toxic chemicals discharged to Michigan sewage treatment facilities (1990-1994).

Facility	City	Toxic chemical release to sewers (pounds)
Upjohn Co.	Portage	16,248,691
S. D. Warren Co.	Muskegon	10,342,635
Cytec Ind. Inc.	Kalamazoo	4,823,396
Lomac Inc.	Muskegon	4,473,020
Delco Chassis Livonia	Livonia	3,972,677
General Motors Corporation	Pontiac	2,403,771
Whitehall Leather Co.	Whitehall	1,550,902
Super Steel Treating Co.	Warren	1,384,699
Wolverine Leathers	Rockford	1,366,197
National Metal Processing Inc.	Detroit	1,280,845

‡ Total discharges of toxic chemicals to sewer systems in Michigan was 63,346,216 in 1990-94. EPA estimates that 25% of all toxic discharges to sewers pass through sewage treatment plants to receiving waters (EPA 1995).

* This polluter did not report any discharges to water in 1994. See Table 9 for year to year pollution figures.

Source: Environmental Working Group. Compiled from U.S. Environmental Protection Agency, Toxics Release Inventory 1990-1994.

Michigan

Toxic pollution of Michigan waters (1990-1994). Carcinogens, persistent toxic metals, and reproductive toxins

Table 6. Total carcinogens, persistent toxic metals, and reproductive toxins** discharged into Michigan waters (1990-1994).**

Carcinogens	175,020 Pounds
Persistent Toxic Metals	579,345 Pounds
Reproductive Toxins	142,181 Pounds
Total (see note)	820,118 Pounds

Note: The sum of carcinogens, persistent toxic metals, and reproductive toxins listed in Table 6 may be larger than the total because a chemical may be in one or more categories, i.e. a chemical may be both a carcinogen and a reproductive toxin. Chemicals were counted only once for the total in Table 6.

Table 7. Michigan waters receiving the greatest amounts of carcinogens, persistent toxic metals, and reproductive toxins** (1990-1994).**

Waters receiving the greatest amounts of carcinogenic chemicals in Michigan (1990-1994).**

River or Water Body	Carcinogens** released to waters (lbs.)
Detroit River	90,285
Tittabawassee River	19,962
Upjohn Pond	14,210
Rouge River	11,965
Kalamazoo River	7,400

Waters receiving the greatest amounts of persistent toxic metals in Michigan (1990-1994).

River or Water Body	Persistent toxic metals released to waters (lbs.)
Detroit River	439,240
Rouge River	36,465
Kalamazoo River	10,001
Black River	7,777
Tittabawassee River	6,404

Waters receiving the greatest amounts of reproductive toxins in Michigan (1990-1994).**

River or Water Body	Reproductive toxins** released to waters (lbs.)
Congdon Drain	76,800
Bean Creek	16,842
Rouge River	11,885
Detroit River	11,105
Tittabawassee River	5,554

Table 8. Polluters reporting the greatest amounts of carcinogens, persistent toxic metals, and reproductive toxins** discharged to Michigan waters (1990-1994).**

Top dischargers of carcinogenic chemicals to Michigan waters (1990-1994).**

Facility	City	Carcinogens** released to waters (lbs.)
BASF Corp.*	Wyandotte	66,750
Dow Chemical USA	Midland	19,962
National Steel Corp.	Ecorse	15,445
Upjohn Co.	Portage	15,225
Rouge Steel Co.	Dearborn	11,720

Top dischargers of persistent toxic metals to Michigan waters (1990-1994).

Facility	City	Persistent toxic metals released to waters (lbs.)
National Steel Corp.	Ecorse	355,875
Mclouth Steel	Trenton	91,075
Sturgis Fndy. Corp.	Sturgis	26,299
Rouge Steel Co.	Dearborn	24,720
General Motors Corporation	Saginaw	9,450

Top dischargers of reproductive toxins to Michigan waters (1990-1994).**

Facility	City	Reproductive toxins** released to waters (lbs.)
Ford Motor Co.*	Wixom	76,800
Metalloy Hudson Foundry	Hudson	16,842
Rouge Steel Co.	Dearborn	11,720
National Steel Corp.	Ecorse	8,765
Dow Chemical USA	Midland	5,554

* This polluter did not report any discharges to water in 1994. See Table 9 for year to year pollution figures.

** Carcinogens and reproductive toxins defined by the State of California Proposition 65, EPA's TRI Public Data Release and other literature. See full report for references.

Source: Environmental Working Group. Compiled from U.S. Environmental Protection Agency, Toxics Release Inventory 1990-1994.

The Environmental Working Group is a non-profit environmental research organization based in Washington, D.C.
Phone: (202) 667-6982 • Fax: (202) 232-2592 • Email: info@ewg.org • Web: <http://www.ewg.org>

The Detroit River in Michigan

Total toxic pollution reported (1990-1994): 1,449,750 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to the Detroit River in Michigan (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
National Steel Corp.	Ecorse	1,027,250
Mclouth Steel	Trenton	193,575
Monsanto Co.	Trenton	91,380
BASF Corp.*	Wyandotte	67,110
Elf Atochem N.A. Inc.	Riverview	55,684
BASF Corp.	Wyandotte	10,466
Freiborne Ind. Inc.	Troy	2,280
Mobil Woodhaven Lube Plant	Woodhaven	2,005

Table 2. Toxic chemicals discharged in the greatest amounts to the Detroit River in Michigan (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Ammonia	761,485
Zinc compounds	202,210
Ethylene glycol	103,310
Antimony	92,000
Propylene oxide	72,300
Manganese	52,500
Ethylene	42,946
Manganese compounds	29,025
Chromium compounds	27,450
Phenol	22,200

‡ The sum of carcinogens, persistent toxic metals, and reproductive toxins listed in Table 3 may be larger than the total because a chemical may be in one or more categories. Chemicals were counted only once for the total in Table 3.

* This polluter did not report any discharges to water in 1994. See Table 9 for year to year pollution figures.

** Carcinogens and reproductive toxins defined by the State of California Proposition 65, EPA's TRI Public Data Release and other literature. See full report for references.

Table 3. Total carcinogens, persistent toxic metals, and reproductive toxins** discharged to the Detroit River in Michigan (1990-1994).**

Carcinogens	90,285 Pounds
Persistent Toxic Metals	439,240 Pounds
Reproductive Toxins	11,105 Pounds
Total‡	514,330 Pounds

Table 4. Polluters reporting the greatest amounts of carcinogens, persistent toxic metals, and reproductive toxins** discharged to the Detroit River in Michigan (1990-1994).**

Top dischargers of carcinogens to the Detroit River in Michigan (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
BASF Corp.*	Wyandotte	66,750
National Steel Corp.	Ecorse	15,200
BASF Corp.	Wyandotte	8,335

Top dischargers of persistent toxic metals to the Detroit River in Michigan (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)
National Steel Corp.	Ecorse	345,900
Mclouth Steel	Trenton	91,075
Mobil Woodhaven Lube Plant	Woodhaven	1,505
Freiborne Ind. Inc.	Troy	760

Top dischargers of reproductive toxins to the Detroit River in Michigan (1990-1994).**

Facility	City	Reproductive toxins** released to water (lbs)
National Steel Corp.	Ecorse	8,600
BASF Corp.	Wyandotte	2,005
BASF Corp.*	Wyandotte	500

Source: Environmental Working Group. Compiled from U.S. Environmental Protection Agency, Toxics Release Inventory 1990-1994.

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The Upjohn Pond in Michigan

Total toxic pollution reported (1990-1994): 959,459 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to the Upjohn Pond in Michigan (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
Upjohn Co.	Portage	959,459

Table 2. Toxic chemicals discharged in the greatest amounts to the Upjohn Pond in Michigan (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Methanol	930,349
Dichloromethane	12,950
Chlorine	7,950
Acetone	4,700
Toluene	1,750
1,2-Dichloroethane	1,260
Zinc (fume or dust)	250
Copper compounds	250

‡ The sum of carcinogens, persistent toxic metals, and reproductive toxins listed in Table 3 may be larger than the total because a chemical may be in one or more categories. Chemicals were counted only once for the total in Table 3.

* This polluter did not report any discharges to water in 1994. See Table 9 for year to year pollution figures.

** Carcinogens and reproductive toxins defined by the State of California Proposition 65, EPA's TRI Public Data Release and other literature. See full report for references.

Table 3. Total carcinogens, persistent toxic metals, and reproductive toxins** discharged to the Upjohn Pond in Michigan (1990-1994).**

Carcinogens	14,210 Pounds
Persistent Toxic Metals	500 Pounds
Reproductive Toxins	1,750 Pounds
Total‡	16,460 Pounds

Table 4. Polluters reporting the greatest amounts of carcinogens, persistent toxic metals, and reproductive toxins** discharged to the Upjohn Pond in Michigan (1990-1994).**

Top dischargers of carcinogens to the Upjohn Pond in Michigan (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
Upjohn Co.	Portage	14,210

Top dischargers of persistent toxic metals to the Upjohn Pond in Michigan (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)
Upjohn Co.	Portage	500

Top dischargers of reproductive toxins to the Upjohn Pond in Michigan (1990-1994).**

Facility	City	Reproductive toxins** released to water (lbs)
Upjohn Co.	Portage	1,750

The Pine River in Michigan

Total toxic pollution reported (1990-1994): 315,223 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to the Pine River in Michigan (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
Total Petroleum Inc.	Alma	315,223

Table 2. Toxic chemicals discharged in the greatest amounts to the Pine River in Michigan (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Diethanolamine	281,000
Ammonia	33,400
Phenol	750

‡ The sum of carcinogens, persistent toxic metals, and reproductive toxins listed in Table 3 may be larger than the total because a chemical may be in one or more categories. Chemicals were counted only once for the total in Table 3.

* This polluter did not report any discharges to water in 1994. See Table 9 for year to year pollution figures.

** Carcinogens and reproductive toxins defined by the State of California Proposition 65, EPA's TRI Public Data Release and other literature. See full report for references.

Table 3. Total carcinogens, persistent toxic metals, and reproductive toxins** discharged to the Pine River in Michigan (1990-1994).**

Carcinogens	8 Pounds
Persistent Toxic Metals	0 Pounds
Reproductive Toxins	66 Pounds
Total‡	66 Pounds

Table 4. Polluters reporting the greatest amounts of carcinogens, persistent toxic metals, and reproductive toxins** discharged to the Pine River in Michigan (1990-1994).**

Top dischargers of carcinogens to the Pine River in Michigan (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)

Top dischargers of persistent toxic metals to the Pine River in Michigan (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)

Top dischargers of reproductive toxins to the Pine River in Michigan (1990-1994).**

Facility	City	Reproductive toxins** released to water (lbs)

Portage Creek in Michigan

Total toxic pollution reported (1990-1994): 306,855 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to Portage Creek in Michigan (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
Upjohn Co.	Portage	306,855

Table 2. Toxic chemicals discharged in the greatest amounts to Portage Creek in Michigan (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Methanol	298,350
Acetone	5,250
Toluene	1,000
Dichloromethane	750
Ammonia	270
1,2-Dichloroethane	265
tert-Butyl alcohol	250
Zinc (fume or dust)	250
Copper compounds	250
n-Butyl alcohol	220

‡ The sum of carcinogens, persistent toxic metals, and reproductive toxins listed in Table 3 may be larger than the total because a chemical may be in one or more categories. Chemicals were counted only once for the total in Table 3.

* This polluter did not report any discharges to water in 1994. See Table 9 for year to year pollution figures.

** Carcinogens and reproductive toxins defined by the State of California Proposition 65, EPA's TRI Public Data Release and other literature. See full report for references.

Table 3. Total carcinogens, persistent toxic metals, and reproductive toxins** discharged to Portage Creek in Michigan (1990-1994).**

Carcinogens	1,015 Pounds
Persistent Toxic Metals	500 Pounds
Reproductive Toxins	1,000 Pounds
Total‡	2,515 Pounds

Table 4. Polluters reporting the greatest amounts of carcinogens, persistent toxic metals, and reproductive toxins** discharged to Portage Creek in Michigan (1990-1994).**

Top dischargers of carcinogens to Portage Creek in Michigan (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
Upjohn Co.	Portage	1,015

Top dischargers of persistent toxic metals to Portage Creek in Michigan (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)
Upjohn Co.	Portage	500

Top dischargers of reproductive toxins to Portage Creek in Michigan (1990-1994).**

Facility	City	Reproductive toxins** released to water (lbs)
Upjohn Co.	Portage	1,000

Lake Huron in Michigan

Total toxic pollution reported (1990-1994): 190,546 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to Lake Huron in Michigan (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
ABTCO Inc.	Alpena	190,536

Table 2. Toxic chemicals discharged in the greatest amounts to Lake Huron in Michigan (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Ammonia	178,000
Formaldehyde	6,721
Phenol	4,600
Sulfuric acid	1,205

‡ The sum of carcinogens, persistent toxic metals, and reproductive toxins listed in Table 3 may be larger than the total because a chemical may be in one or more categories. Chemicals were counted only once for the total in Table 3.

* This polluter did not report any discharges to water in 1994. See Table 9 for year to year pollution figures.

** Carcinogens and reproductive toxins defined by the State of California Proposition 65, EPA's TRI Public Data Release and other literature. See full report for references.

Table 3. Total carcinogens, persistent toxic metals, and reproductive toxins** discharged to Lake Huron in Michigan (1990-1994).**

Carcinogens	6,726 Pounds
Persistent Toxic Metals	10 Pounds
Reproductive Toxins	0 Pounds
Total‡	6,731 Pounds

Table 4. Polluters reporting the greatest amounts of carcinogens, persistent toxic metals, and reproductive toxins** discharged to Lake Huron in Michigan (1990-1994).**

Top dischargers of carcinogens to Lake Huron in Michigan (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
ABTCO Inc.	Alpena	6,721

Top dischargers of persistent toxic metals to Lake Huron in Michigan (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)

Top dischargers of reproductive toxins to Lake Huron in Michigan (1990-1994).**

Facility	City	Reproductive toxins** released to water (lbs)

The Rouge River in Michigan

Total toxic pollution reported (1990-1994): 151,375 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to the Rouge River in Michigan (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
Rouge Steel Co.	Dearborn	113,220
National Steel Corp.	Ecorse	34,135
Double Eagle Steel Coating Co.	Dearborn	3,770
Ford*	Dearborn	250

Table 2. Toxic chemicals discharged in the greatest amounts to the Rouge River in Michigan (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Ammonia	114,660
Zinc compounds	13,670
Lead	11,885
Copper	10,830
Chlorine	250

‡ The sum of carcinogens, persistent toxic metals, and reproductive toxins listed in Table 3 may be larger than the total because a chemical may be in one or more categories. Chemicals were counted only once for the total in Table 3.

* This polluter did not report any discharges to water in 1994. See Table 9 for year to year pollution figures.

** Carcinogens and reproductive toxins defined by the State of California Proposition 65, EPA's TRI Public Data Release and other literature. See full report for references.

Table 3. Total carcinogens, persistent toxic metals, and reproductive toxins** discharged to the Rouge River in Michigan (1990-1994).**

Carcinogens	11,965 Pounds
Persistent Toxic Metals	36,465 Pounds
Reproductive Toxins	11,885 Pounds
Total‡	36,465 Pounds

Table 4. Polluters reporting the greatest amounts of carcinogens, persistent toxic metals, and reproductive toxins** discharged to the Rouge River in Michigan (1990-1994).**

Top dischargers of carcinogens to the Rouge River in Michigan (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
Rouge Steel Co.	Dearborn	11,720
National Steel Corp.	Ecorse	245

Top dischargers of persistent toxic metals to the Rouge River in Michigan (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)
Rouge Steel Co.	Dearborn	24,720
National Steel Corp.	Ecorse	7,975
Double Eagle Steel Coating Co.	Dearborn	3,770

Top dischargers of reproductive toxins to the Rouge River in Michigan (1990-1994).**

Facility	City	Reproductive toxins** released to water (lbs)
Rouge Steel Co.	Dearborn	11,720
National Steel Corp.	Ecorse	165

The Tittabawasse River in Michigan

Total toxic pollution reported (1990-1994): 118,560 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to the Tittabawasse River in Michigan (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
Dow Chemical USA	Midland	118,560

Table 2. Toxic chemicals discharged in the greatest amounts to the Tittabawasse River in Michigan (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Chloroacetic acid	23,031
Methanol	20,981
1,2-Butylene oxide	13,258
Ammonia	12,250
Formaldehyde	8,991
Ethylene glycol	5,950
Acrylamide	4,995
Chloromethane	4,643
Acetone	4,339
Styrene	2,847

‡ The sum of carcinogens, persistent toxic metals, and reproductive toxins listed in Table 3 may be larger than the total because a chemical may be in one or more categories. Chemicals were counted only once for the total in Table 3.

* This polluter did not report any discharges to water in 1994. See Table 9 for year to year pollution figures.

** Carcinogens and reproductive toxins defined by the State of California Proposition 65, EPA's TRI Public Data Release and other literature. See full report for references.

Table 3. Total carcinogens, persistent toxic metals, and reproductive toxins** discharged to the Tittabawasse River in Michigan (1990-1994).**

Carcinogens	19,962 Pounds
Persistent Toxic Metals	6,404 Pounds
Reproductive Toxins	5,554 Pounds
Total‡	28,793 Pounds

Table 4. Polluters reporting the greatest amounts of carcinogens, persistent toxic metals, and reproductive toxins** discharged to the Tittabawasse River in Michigan (1990-1994).**

Top dischargers of carcinogens to the Tittabawasse River in Michigan (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
Dow Chemical USA	Midland	19,962

Top dischargers of persistent toxic metals to the Tittabawasse River in Michigan (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)
Dow Chemical USA	Midland	6,404

Top dischargers of reproductive toxins to the Tittabawasse River in Michigan (1990-1994).**

Facility	City	Reproductive toxins** released to water (lbs)
Dow Chemical USA	Midland	5,554

The Congdon Drain in Michigan

Total toxic pollution reported (1990-1994): 89,706 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to the Congdon Drain in Michigan (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
Ford Motor Co.*	Wixom	89,706

Table 2. Toxic chemicals discharged in the greatest amounts to the Congdon Drain in Michigan (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Glycol ethers	76,800
Ethylene glycol	10,170
Manganese compounds	1,901
Zinc compounds	293
Methyl isobutyl ketone	290
Nickel compounds	220

‡ The sum of carcinogens, persistent toxic metals, and reproductive toxins listed in Table 3 may be larger than the total because a chemical may be in one or more categories. Chemicals were counted only once for the total in Table 3.

* This polluter did not report any discharges to water in 1994. See Table 9 for year to year pollution figures.

** Carcinogens and reproductive toxins defined by the State of California Proposition 65, EPA's TRI Public Data Release and other literature. See full report for references.

Table 3. Total carcinogens, persistent toxic metals, and reproductive toxins** discharged to the Congdon Drain in Michigan (1990-1994).**

Carcinogens	245 Pounds
Persistent Toxic Metals	2,446 Pounds
Reproductive Toxins	76,800 Pounds
Total‡	79,246 Pounds

Table 4. Polluters reporting the greatest amounts of carcinogens, persistent toxic metals, and reproductive toxins** discharged to the Congdon Drain in Michigan (1990-1994).**

Top dischargers of carcinogens to the Congdon Drain in Michigan (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
Ford Motor Co.*	Wixom	245

Top dischargers of persistent toxic metals to the Congdon Drain in Michigan (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)
Ford Motor Co.*	Wixom	2,446

Top dischargers of reproductive toxins to the Congdon Drain in Michigan (1990-1994).**

Facility	City	Reproductive toxins** released to water (lbs)
Ford Motor Co.*	Wixom	76,800

Monguagon Creek in Michigan

Total toxic pollution reported (1990-1994): 81,884 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to Monguagon Creek in Michigan (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
Elf Atochem N.A. Inc.	Riverview	81,884

Table 2. Toxic chemicals discharged in the greatest amounts to Monguagon Creek in Michigan (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Ammonia	46,049
Ethylene	35,216
Sulfuric acid	193
Chlorine	190
Ethylene oxide	151

‡ The sum of carcinogens, persistent toxic metals, and reproductive toxins listed in Table 3 may be larger than the total because a chemical may be in one or more categories. Chemicals were counted only once for the total in Table 3.

* This polluter did not report any discharges to water in 1994. See Table 9 for year to year pollution figures.

** Carcinogens and reproductive toxins defined by the State of California Proposition 65, EPA's TRI Public Data Release and other literature. See full report for references.

Table 3. Total carcinogens, persistent toxic metals, and reproductive toxins** discharged to Monguagon Creek in Michigan (1990-1994).**

Carcinogens	151 Pounds
Persistent Toxic Metals	0 Pounds
Reproductive Toxins	151 Pounds
Total‡	151 Pounds

Table 4. Polluters reporting the greatest amounts of carcinogens, persistent toxic metals, and reproductive toxins** discharged to Monguagon Creek in Michigan (1990-1994).**

Top dischargers of carcinogens to Monguagon Creek in Michigan (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
Elf Atochem N.A. Inc.	Riverview	151

Top dischargers of persistent toxic metals to Monguagon Creek in Michigan (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)

Top dischargers of reproductive toxins to Monguagon Creek in Michigan (1990-1994).**

Facility	City	Reproductive toxins** released to water (lbs)
Elf Atochem N.A. Inc.	Riverview	151

The Menomonee River in Michigan

Total toxic pollution reported (1990-1994): 79,048 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to the Menomonee River in Michigan (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
Champion Intl. Corp.	Quinnesec	76,798
Menominee Paper Co. Inc.*	Menominee	2,250

Table 2. Toxic chemicals discharged in the greatest amounts to the Menomonee River in Michigan (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Methanol	40,000
Ammonia	23,820
Ethylene glycol	9,600
Chloroform	3,930
Chlorine	750
Ammonium nitrate (solution)	750
Acetone	198

‡ The sum of carcinogens, persistent toxic metals, and reproductive toxins listed in Table 3 may be larger than the total because a chemical may be in one or more categories. Chemicals were counted only once for the total in Table 3.

* This polluter did not report any discharges to water in 1994. See Table 9 for year to year pollution figures.

** Carcinogens and reproductive toxins defined by the State of California Proposition 65, EPA's TRI Public Data Release and other literature. See full report for references.

Table 3. Total carcinogens, persistent toxic metals, and reproductive toxins** discharged to the Menomonee River in Michigan (1990-1994).**

Carcinogens	3,930 Pounds
Persistent Toxic Metals	0 Pounds
Reproductive Toxins	0 Pounds
Total‡	3,930 Pounds

Table 4. Polluters reporting the greatest amounts of carcinogens, persistent toxic metals, and reproductive toxins** discharged to the Menomonee River in Michigan (1990-1994).**

Top dischargers of carcinogens to the Menomonee River in Michigan (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
Champion Intl. Corp.	Quinnesec	3,930

Top dischargers of persistent toxic metals to the Menomonee River in Michigan (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)
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Top dischargers of reproductive toxins to the Menomonee River in Michigan (1990-1994).**

Facility	City	Reproductive toxins** released to water (lbs)
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