

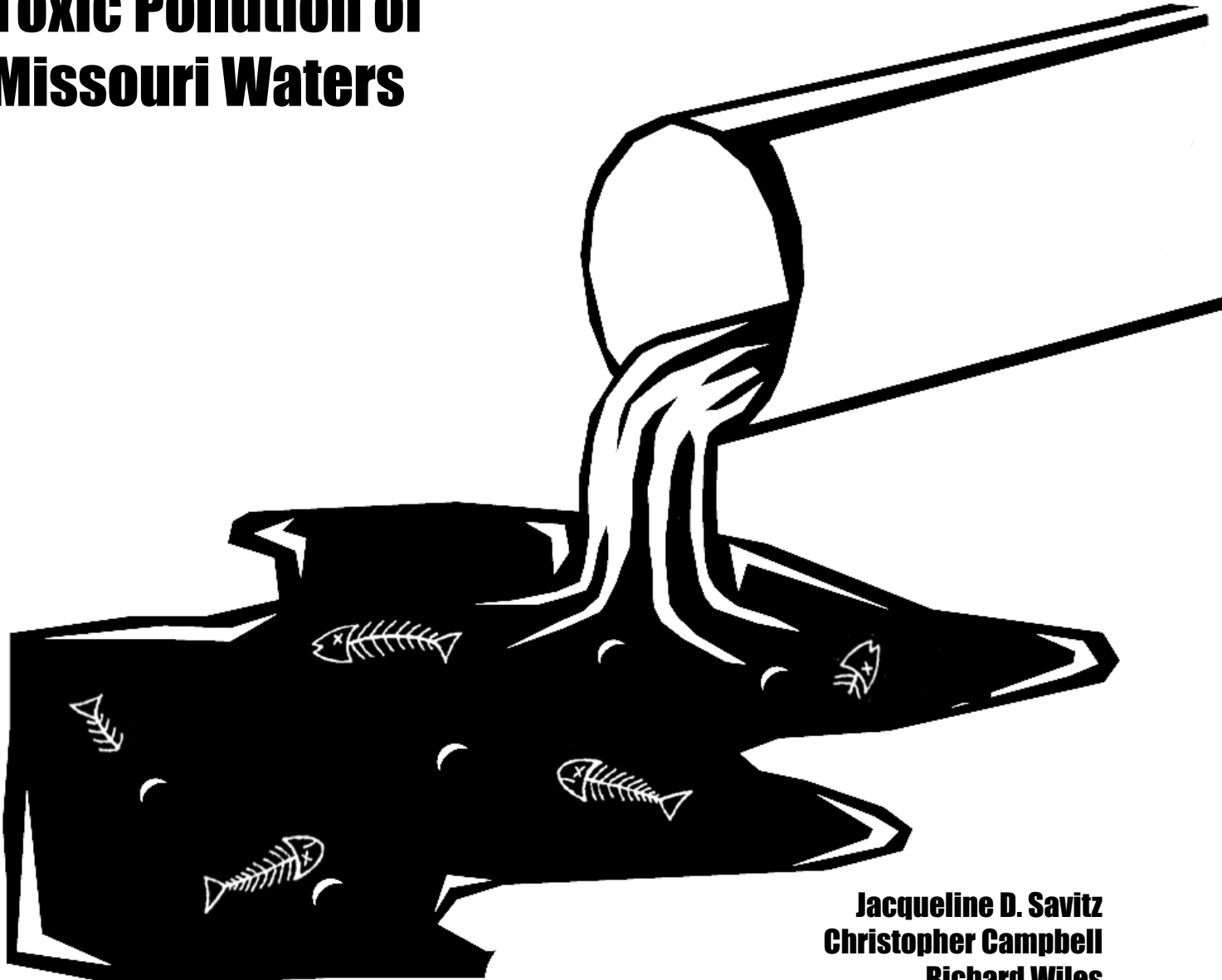


The State PIRGs



Dishonorable Discharge

Toxic Pollution of Missouri Waters



**Jacqueline D. Savitz
Christopher Campbell
Richard Wiles
Carolyn Hartmann**

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Toxic Pollution of Missouri Waters

Executive Summary

Most Missouri 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 Missouri streams and rivers.

The citizens of Missouri 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 Missouri and nationwide.

Factories and other industrial facilities dumped more than 6.6 million pounds of toxic substances directly into Missouri's waters between 1990 and 1994, according to a new analysis of the federal Toxics Release Inventory (TRI) (Table 1). Missouri ranked 22nd 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 one hundred twenty million pounds of toxic materials were flushed to sewage treatment plants in Missouri from 1990 through 1994, 4th in the nation (Table 1.) EPA estimates that twenty-five percent of all discharges nationwide flow through sewage treatment plants untreated (EPA 1995). If this is true, it raises the total amount of toxics dumped to the state's waters to an estimated 36.9 million pounds (Table 1).

The Mississippi River received the greatest amount of toxic water pollution in Missouri from 1990-1994, a total of 4,980,000 pounds, followed by Center Creek, Grove Creek, and the Missouri River (Table 2). The ten most polluted waterways in Missouri received 6,580,000 pounds of toxic pollution between 1990 and 1994, 99.4% percent of the total in the State.

The top three facilities reporting the most toxic pollution of Missouri's waters over this period were Dyno Nobel Inc., Lomo Plant in Louisiana, which dumped 3,380,000 pounds of toxic chemicals, followed by Biokyowa Inc. in Cape Girardeau, and Dyno

Nobel Inc. in Carthage (Table 3). The toxic chemicals dumped in the greatest amounts were ammonium nitrate solution, a total of 4,680,000 pounds, followed by ammonia, and nitroglycerin (Table 4).

Lee-Rowan,* located in Jackson, dumped the most carcinogens into Missouri's waters, a total of 5,700 pounds, followed by Lee-Rowan Company,* in Saint Louis and Doe Run Company in Herculaneum (Table 8). The Mississippi River received the greatest amount of cancer-causing toxic chemicals in Missouri, a total of 6,600 pounds, followed by the Blue River and the Missouri River (Table 7).

Doe Run Company dumped the greatest amount of persistent toxic metals in Missouri's waters, a total of 6,000 pounds, followed by Lee-Rowan*, Jackson and Lee-Rowan Company*, Saint Louis (Table 8). The Mississippi River received the greatest amount of persistent toxic metals, a total of 7,300 pounds, followed by Crooked Creek and a waterway listed only as Portage Open Bay Ditch (Table 7).

Lee-Rowan*, in Jackson dumped the greatest amount of toxic chemicals that cause reproductive damage or birth defects into Missouri's waters, a total of 6,000 pounds, followed by Lee-Rowan Company* in Saint Louis, and American Cyanamid Company (Table 8). The Mississippi River received the greatest amount of toxic chemicals that cause reproductive damage or birth defects, a total of 2,000 pounds, followed by the Missouri River and the waterway reported as Portage Open Bay Ditch (Table 7).

These discharges to Missouri's waters include only those wastes released by companies physically located in Missouri. 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 Missouri, the Department of Health advises the public to restrict consumption of bottom fish, such as catfish and carp from any non-Ozark stream due to high levels of PCBs, Chlordane, and other contaminants. (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 sew-

ers 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 Missouri'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 Missouri. 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 (Aspen 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 Appendix 2.

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-Acetylaminoanthracene	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)	Safrrole
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).

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Missouri

Toxic pollution of Missouri waters (1990-1994)

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

Direct Water Discharges	6,617,590 Pounds
Estimated Sewer Discharges‡	30,245,814 Pounds
Total Discharges to Waters	36,863,404 Pounds

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

River or Water Body	Toxic chemical release to waterbody (pounds)
Mississippi River	4,975,622
Center Creek	747,184
Grove Creek	361,204
Missouri River	226,163
Blue River	172,978
Big Piney River	64,250
Elk River	10,283
Salt River	6,450
Portage Open Bay Ditch	6,027
Cold Water Creek	5,548

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

Facility	City	Toxic chemical release to waters (pounds)
Dyno Nobel Inc. Lomo Plant	Louisiana	3,384,200
Biokyowa Inc.	Cape Girardeau	948,018
Dyno Nobel Inc.	Carthage	747,184
Laroche Ind. Inc.	Festus	557,497
Bayer Corp.	Kansas City	386,585
ICI Explosives USA Inc.	Joplin	361,204
American Cyanamid Co.	Palmyra	71,849
U.S. Army HQ USAEC	Fort Leonard Wood	64,250
Hudson Foods Inc.	Noel	10,283
Wire Rope Corp. Of America*	Kansas City	7,364

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

Chemical	Toxic chemical release to waters (pounds)
Ammonium nitrate (solution)	4,684,118
Ammonia	1,631,933
Nitroglycerin	70,847
Chlorine	67,377
Sulfuric acid	57,074
Methanol	28,108
Nickel	14,542
Lead compounds	7,001
Zinc compounds	5,658
Nitric acid	4,759

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

Facility	City	Toxic chemical release to sewers (pounds)
Columbian Chemicals Co.	Saint Louis	74,735,900
Mallinckrodt Chemical Inc.	Saint Louis	21,292,566
Monsanto Co.	Saint Louis	11,538,735
Blueside Co. Inc.	Saint Joseph	3,474,370
Sigma Chemical Co.	Saint Louis	1,364,137
Sigma Chemical Co.	Saint Louis	1,266,622
Syntex Agribusiness Inc.	Springfield	1,150,958
Anheuser-Busch Inc.	Saint Louis	773,137
Chrysler Motors Corp.	Fenton	646,203
Petrolite Corp.	Saint Louis	392,052

‡ Total discharges of toxic chemicals to sewer systems in Missouri was 120,983,258 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.

Missouri

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

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

Carcinogens	37,354 Pounds
Persistent Toxic Metals	46,015 Pounds
Reproductive Toxins	21,607 Pounds
Total (see note)	60,319 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. Missouri waters receiving the greatest amounts of carcinogens, persistent toxic metals, and reproductive toxins** (1990-1994).**

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

River or Water Body	Carcinogens** released to waters (lbs.)
Mississippi River	6,570
Blue River	3,088
Missouri River	2,977
Portage Open Bay Ditch	2,469
Crooked Creek	2,005

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

River or Water Body	Persistent toxic metals released to waters (lbs.)
Mississippi River	7,347
Crooked Creek	4,505
Portage Open Bay Ditch	3,717
Jordan Creek	2,750
Blue River	2,505

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

River or Water Body	Reproductive toxins** released to waters (lbs.)
Mississippi River	2,220
Missouri River	2,206
Portage Open Bay Ditch	1,680
Jordan Creek	1,250
Sac River	760

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

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

Facility	City	Carcinogens** released to waters (lbs.)
Lee-Rowan*	Jackson	5,745
Lee-Rowan Co.*	Saint Louis	5,215
Doe Run Co.	Herculaneum	4,304
Bayer Corp.	Kansas City	3,350
Plastene Supply Co.	Portageville	3,079

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

Facility	City	Persistent toxic metals released to waters (lbs.)
Doe Run Co.	Herculaneum	5,883
Lee-Rowan*	Jackson	5,745
Lee-Rowan Co.*	Saint Louis	5,215
Plastene Supply Co.	Portageville	4,627
Doe Run Co.	Boss	4,505

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

Facility	City	Reproductive toxins** released to waters (lbs.)
Lee-Rowan*	Jackson	5,745
Lee-Rowan Co.*	Saint Louis	5,215
American Cyanamid Co.	Palmyra	2,010
Plastene Supply Co.	Portageville	1,970
Paul Mueller Co.	Springfield	1,685

* 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.

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The Mississippi River in Missouri

Total toxic pollution reported (1990-1994): 4,975,622 Pounds

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

Facility	City	Toxic chemical release to water (pounds)
Dyno Nobel Inc. Lomo Plant	Louisiana	3,382,760
Biokyowa Inc.	Cape Girardeau	948,018
Laroche Ind. Inc.	Festus	557,497
American Cyanamid Co.	Palmyra	71,849
Doe Run Co.	Herculaneum	5,893
Missouri Chemical Works	Louisiana	3,310
Holnam Inc.	Clarksville	2,954
Continental Cement Co. Inc.*	Hannibal	1,927
Gardner-denver Machinery	La Grange	1,414

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

Chemical	Toxic chemical release to waterbody (pounds)
Ammonium nitrate (solution)	3,882,677
Ammonia	1,042,314
Sulfuric acid	32,130
Chlorine	3,022
Lead compounds	2,492
Arsenic compounds	1,532
Methanol	1,385
Manganese	1,355
Dichloromethane	1,175
Toluene	1,136

‡ 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 Mississippi River in Missouri (1990-1994).**

Carcinogens	6,570 Pounds
Persistent Toxic Metals	7,347 Pounds
Reproductive Toxins	2,220 Pounds
Total‡	11,780 Pounds

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

Top dischargers of carcinogens to the Mississippi River in Missouri (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
Doe Run Co.	Herculaneum	4,304
American Cyanamid Co.	Palmyra	2,035
Continental Cement Co. Inc.*	Hannibal	231

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

Facility	City	Persistent toxic metals released to water (lbs)
Doe Run Co.	Herculaneum	5,883
Gardner-denver Machinery	La Grange	1,414

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

Facility	City	Reproductive toxins** released to water (lbs)
American Cyanamid Co.	Palmyra	2,010
Continental Cement Co. Inc.*	Hannibal	210

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

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Center Creek in Missouri

Total toxic pollution reported (1990-1994): 747,184 Pounds

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

Facility	City	Toxic chemical release to water (pounds)
Dyno Nobel Inc.	Carthage	747,184

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

Chemical	Toxic chemical release to waterbody (pounds)
Ammonium nitrate (solution)	678,108
Nitroglycerin	69,076

‡ 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 Center Creek in Missouri (1990-1994).**

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

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

Top dischargers of carcinogens to Center Creek in Missouri (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)

Top dischargers of persistent toxic metals to Center Creek in Missouri (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)

Top dischargers of reproductive toxins to Center Creek in Missouri (1990-1994).**

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

Grove Creek in Missouri

Total toxic pollution reported (1990-1994): 361,204 Pounds

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

Facility	City	Toxic chemical release to water (pounds)
ICI Explosives USA Inc.	Joplin	361,204

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

Chemical	Toxic chemical release to waterbody (pounds)
Ammonia	223,556
Ammonium nitrate (solution)	121,893
Sulfuric acid	9,784
Nitric acid	3,409
Nitroglycerin	1,771
Barium compounds	516
Ethylene glycol	265

‡ 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 Grove Creek in Missouri (1990-1994).**

Carcinogens	0 Pounds
Persistent Toxic Metals	516 Pounds
Reproductive Toxins	5 Pounds
Total‡	521 Pounds

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

Top dischargers of carcinogens to Grove Creek in Missouri (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)

Top dischargers of persistent toxic metals to Grove Creek in Missouri (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)
ICI Explosives USA Inc.	Joplin	516

Top dischargers of reproductive toxins to Grove Creek in Missouri (1990-1994).**

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

The Missouri River in Missouri

Total toxic pollution reported (1990-1994): 226,163 Pounds

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

Facility	City	Toxic chemical release to water (pounds)
Bayer Corp.	Kansas City	223,226
Cook Composites & Polymers	North Kansas City	2,565
Albaugh Inc.	Saint Joseph	132
Johnson Controls	Saint Joseph	100

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

Chemical	Toxic chemical release to waterbody (pounds)
Ammonia	202,287
Methanol	17,993
Styrene	1,065
1,2-Dichloroethane	947
Ethylene glycol	917
Formaldehyde	769
Toluene	519
Glycol ethers	260
Xylene (mixed isomers)	260
n-Butyl alcohol	255

‡ 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 Missouri River in Missouri (1990-1994).**

Carcinogens	2,977 Pounds
Persistent Toxic Metals	153 Pounds
Reproductive Toxins	2,206 Pounds
Total‡	4,126 Pounds

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

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

Facility	City	Carcinogens** released to water (lbs)
Bayer Corp.	Kansas City	1,517
Cook Composites & Polymers	North Kansas City	1,315
Johnson Controls	Saint Joseph	100

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

Facility	City	Persistent toxic metals released to water (lbs)
Johnson Controls	Saint Joseph	100

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

Facility	City	Reproductive toxins** released to water (lbs)
Cook Composites & Polymers	North Kansas City	1,565
Bayer Corp.	Kansas City	584

The Blue River in Missouri

Total toxic pollution reported (1990-1994): 172,978 Pounds

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

Facility	City	Toxic chemical release to water (pounds)
Bayer Corp.	Kansas City	163,359
Wire Rope Corp. Of America*	Kansas City	7,364
Armco Inc.*	Kansas City	1,505
GS Techs. Operating Co. Inc.	Kansas City	750

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

Chemical	Toxic chemical release to waterbody (pounds)
Ammonia	151,922
Methanol	8,715
Sulfuric acid	5,544
1,2-Dichloroethane	1,544
Nitric acid	1,320
Lead compounds	1,255
Zinc compounds	1,250
Ethylene glycol	594
Formaldehyde	270
Hydrochloric acid	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 Blue River in Missouri (1990-1994).**

Carcinogens	3,088 Pounds
Persistent Toxic Metals	2,505 Pounds
Reproductive Toxins	193 Pounds
Total‡	4,531 Pounds

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

Top dischargers of carcinogens to the Blue River in Missouri (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
Bayer Corp.	Kansas City	1,833
Armco Inc.*	Kansas City	755
GS Techs. Operating Co. Inc.	Kansas City	500

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

Facility	City	Persistent toxic metals released to water (lbs)
Armco Inc.*	Kansas City	1,505
GS Techs. Operating Co. Inc.	Kansas City	750
Wire Rope Corp. Of America*	Kansas City	250

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

Facility	City	Reproductive toxins** released to water (lbs)
Bayer Corp.	Kansas City	193

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

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The Big Piney River in Missouri

Total toxic pollution reported (1990-1994): 64,250 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to the Big Piney River in Missouri (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
U.S. Army HQ USAEC	Fort Leonard Wood	64,250

Table 2. Toxic chemicals discharged in the greatest amounts to the Big Piney River in Missouri (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Chlorine	64,000
Ethylene glycol	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 Big Piney River in Missouri (1990-1994).**

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

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

Top dischargers of carcinogens to the Big Piney River in Missouri (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)

Top dischargers of persistent toxic metals to the Big Piney River in Missouri (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)

Top dischargers of reproductive toxins to the Big Piney River in Missouri (1990-1994).**

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

The Elk River in Missouri

Total toxic pollution reported (1990-1994): 10,283 Pounds

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

Facility	City	Toxic chemical release to water (pounds)
Hudson Foods Inc.	Noel	10,283

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

Chemical	Toxic chemical release to waterbody (pounds)
Ammonia	10,283

‡ 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 Elk River in Missouri (1990-1994).**

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

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

Top dischargers of carcinogens to the Elk River in Missouri (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)

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

Facility	City	Persistent toxic metals released to water (lbs)

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

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

The Salt River in Missouri

Total toxic pollution reported (1990-1994): 6,450 Pounds

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

Facility	City	Toxic chemical release to water (pounds)
A. P. Green Ind. Inc.	Mexico	6,450

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

Chemical	Toxic chemical release to waterbody (pounds)
Sulfuric acid	4,160
Phosphoric acid	2,290

‡ 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 Salt River in Missouri (1990-1994).**

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

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

Top dischargers of carcinogens to the Salt River in Missouri (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)

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

Facility	City	Persistent toxic metals released to water (lbs)

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

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

Portage Open Bay Ditch in Missouri

Total toxic pollution reported (1990-1994): 6,027 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to Portage Open Bay Ditch in Missouri (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
Plastene Supply Co.	Portageville	6,027

Table 2. Toxic chemicals discharged in the greatest amounts to Portage Open Bay Ditch in Missouri (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Methyl ethyl ketone	1,767
Copper	1,708
Nickel	1,673
Formaldehyde	460
Chromium	336

‡ 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 Open Bay Ditch in Missouri (1990-1994).**

Carcinogens	2,469 Pounds
Persistent Toxic Metals	3,717 Pounds
Reproductive Toxins	1,680 Pounds
Total‡	4,184 Pounds

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

Top dischargers of carcinogens to Portage Open Bay Ditch in Missouri (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
Plastene Supply Co.	Portageville	2,469

Top dischargers of persistent toxic metals to Portage Open Bay Ditch in Missouri (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)
Plastene Supply Co.	Portageville	3,717

Top dischargers of reproductive toxins to Portage Open Bay Ditch in Missouri (1990-1994).**

Facility	City	Reproductive toxins** released to water (lbs)
Plastene Supply Co.	Portageville	1,680

Cold Water Creek in Missouri

Total toxic pollution reported (1990-1994): 5,548 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to Cold Water Creek in Missouri (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
Ford Motor Co.*	Hazelwood	4,500
McDonnell Douglas Corp.	Saint Louis	1,048

Table 2. Toxic chemicals discharged in the greatest amounts to Cold Water Creek in Missouri (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Sulfuric acid	4,500
Benzene	500
Chromium	457

‡ 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 Cold Water Creek in Missouri (1990-1994).**

Carcinogens	957 Pounds
Persistent Toxic Metals	548 Pounds
Reproductive Toxins	500 Pounds
Total‡	1,048 Pounds

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

Top dischargers of carcinogens to Cold Water Creek in Missouri (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
McDonnell Douglas Corp.	Saint Louis	957

Top dischargers of persistent toxic metals to Cold Water Creek in Missouri (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)
McDonnell Douglas Corp.	Saint Louis	548

Top dischargers of reproductive toxins to Cold Water Creek in Missouri (1990-1994).**

Facility	City	Reproductive toxins** released to water (lbs)
McDonnell Douglas Corp.	Saint Louis	500