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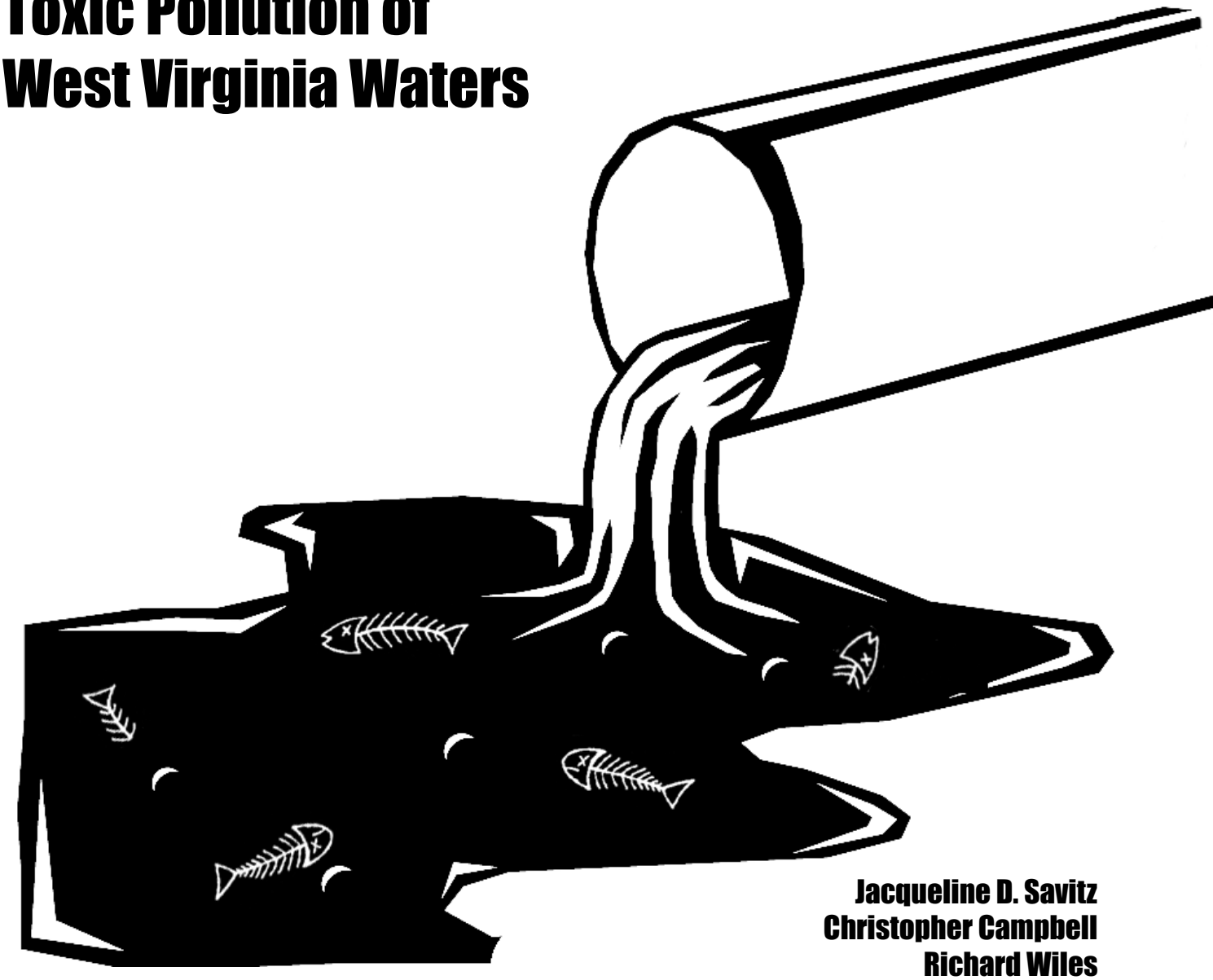
Dishonorable Discharge

Toxic Pollution of West Virginia Waters



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Toxic Pollution of West Virginia Waters

Executive Summary

Most West Virginia 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 West Virginia streams and rivers.

The citizens of West Virginia 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 West Virginia and nationwide.

Factories and other industrial facilities dumped more than 8.2 million pounds of toxic substances directly into West Virginia's waters between 1990 and 1994, according to a new analysis of the federal Toxics Release Inventory (TRI) (Table 1). West Virginia ranked 17th 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 ten (10.3) million pounds of toxic materials were flushed to sewage treatment plants in West Virginia from 1990 through 1994, 26th 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 West Virginia raises the total amount of toxics dumped to the state's waters to an estimated 10.8 million pounds (Table 1).

The Ohio River received the greatest amount of toxic water pollution in West Virginia from 1990-1994, a total of 4,740,000 pounds, followed by the Kanawha River, Harmon Creek, and the Greenbrier River (Table 2). The ten most polluted waterways in West Virginia received 8,210,000 pounds of toxic pollution between 1990 and 1994, 99.9% percent of the total in the State.

The top three facilities reporting the most toxic pollution of West Virginia's waters over this period were Weirton Steel Corporation in Weirton, which dumped 1,740,000 pounds of toxic chemicals, followed by Du Pont, and Wheeling-Pittsburgh Steel Corp in the towns

of Belle, and Follansbee, respectively (Table 3). The toxic chemicals dumped in the greatest amounts were ammonia, a total of 5,680,000 pounds, followed by ethylene glycol, and ammonium sulfate solution (Table 4).

Weirton Steel Corporation dumped the most carcinogens into West Virginia's waters, a total of 40,800 pounds, followed by Monsanto Company and Bayer Corporation (Table 8). The Ohio River received the greatest amount of cancer-causing toxic chemicals in West Virginia, a total of 80,000 pounds, followed by the Kanawha River and Harmon Creek (Table 7).

Weirton Steel Corporation dumped the greatest amount of persistent toxic metals in West Virginia's waters, a total of 617,000 pounds, followed by Bayer Corporation and Hanlin Chemicals* (Table 8). The Ohio River received the greatest amount of persistent toxic metals, a total of 460,000 pounds, followed by Harmon Creek and Buzzard Run (Table 7).

OSI Specialties Inc. dumped the greatest amount of toxic chemicals that cause reproductive damage or birth defects into West Virginia's waters, a total of 129,000 pounds, followed by Monsanto Company and Akzo Nobel Chemicals Inc. (Table 8). The Ohio River received the greatest amount of toxic chemicals that cause reproductive damage or birth defects, a total of 105,000 pounds, followed by Sugar Camp Run and the Kanawha River (Table 7).

These discharges to West Virginia's waters include only those wastes released by companies physically located in West Virginia. 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 West Virginia, more than 2,000 miles of rivers and streams, and almost 8,000 acres of the lakes surveyed had elevated levels of toxic substances. (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 90[1] 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 343[2] 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 West Virginia's waters, we used EPA's assumption that 25 percent of all toxic chemicals transferred to POTWs pass-through untreated[3]. Table 1 presents the EWG estimate of toxic chemicals assumed to be discharged by the POTWs in West Virginia. 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 pounds[4] 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

[1]Estimate 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).

[2]The 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.

[3]EPA 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.

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

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
Toulene
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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Dishonorable Discharge

West Virginia

Toxic pollution of West Virginia waters (1990-1994)

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

Direct Water Discharges	8,217,782 Pounds
Estimated Sewer Discharges‡	2,587,124 Pounds
Total Discharges to Waters	**10,804,906 Pounds**

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

River or Water Body	Toxic chemical release to waterbody (pounds)
Ohio River	4,743,247
Kanawha River	2,320,910
Harmon Creek	409,012
Greenbrier River	344,195
Twelve Pole Creek	269,835
Sugar Camp Run	110,666
Lens Creek	6,000
Reynold's Branch	4,575
Simmons Creek	2,600
Buzzard Run	2,110

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

Facility	City	Toxic chemical release to waters (pounds)
Weirton Steel Corp.	Weirton	1,743,607
Du Pont	Belle	1,231,219
Wheeling-Pittsburgh Steel Corp	Follansbee	1,197,600
Cytec Ind.	Belmont	856,876
Olin Corp.	South Charleston	498,283
Bayer Corp.	New Martinsville	428,462
Howes Leather Co. Inc.	Frank	344,195
Du Pont	Washington	317,097
Monsanto Co.	Nitro	286,724
Kanawha River Terminals Inc.	Ceredo	269,835

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

Chemical	Toxic chemical release to waters (pounds)
Ammonia	5,677,571
Ethylene glycol	411,574
Ammonium sulfate (solution)	310,000
Methanol	301,401
Manganese compounds	162,907
Glycol ethers	131,265
Zinc compounds	129,666
Manganese	120,385
Chromium compounds	93,991
Sulfuric acid	84,876

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

Facility	City	Toxic chemical release to sewers (pounds)
Union Carbide Corp.	South Charleston	4,734,414
BASF Corp.	Huntington	2,634,299
Arco Chemical Co.	South Charleston	2,236,434
FMC Corp.	South Charleston	270,692
Union Carbide Corp.	South Charleston	259,789
Broughton Foods Co.	Charleston	67,234
Inco Alloys Intl. Inc.	Huntington	51,310
Borden Inc.	Charleston	49,543
Occidental Chemical Corp.	Belle	20,346
Huntington Plating Inc.	Huntington	4,500

‡ Total discharges of toxic chemicals to sewer systems in West Virginia was 10,348,497 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.

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Dishonorable Discharge

West Virginia

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

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

Carcinogens	146,209 Pounds
Persistent Toxic Metals	671,462 Pounds
Reproductive Toxins	247,648 Pounds
Total (see note)	**991,993 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. West Virginia waters receiving the greatest amounts of carcinogens, persistent toxic metals, and reproductive toxins** (1990-1994).**

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

River or Water Body	Carcinogens** released to waters (lbs.)
Ohio River	80,188
Kanawha River	45,978
Harmon Creek	11,414
Reynold's Branch	4,575
Sugar Camp Run	3,206

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

River or Water Body	Persistent toxic metals released to waters (lbs.)
Ohio River	459,970
Harmon Creek	207,538
Buzzard Run	2,110
Kanawha River	482
Pat's Branch	365

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

River or Water Body	Reproductive toxins** released to waters (lbs.)
Ohio River	104,683
Sugar Camp Run	82,800
Kanawha River	58,053
Harmon Creek	2,026

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

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

Facility	City	Carcinogens** released to waters (lbs.)
Weirton Steel Corp.	Weirton	40,836
Monsanto Co.	Nitro	30,882
Bayer Corp.	New Martinsville	16,260
PPG Ind. Inc.	New Martinsville	13,130
Du Pont	Washington	12,298

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

Facility	City	Persistent toxic metals released to waters (lbs.)
Weirton Steel Corp.	Weirton	617,109
Bayer Corp.	New Martinsville	22,394
Hanlin Chemicals*	Moundsville	5,565
American Alloys Inc.	New Haven	5,421
L. B. Foster Co.	Washington	4,072

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

Facility	City	Reproductive toxins** released to waters (lbs.)
OSI Specialties Inc.	Sistersville	128,971
Monsanto Co.	Nitro	47,129
Akzo Nobel Chemicals Inc.	Gallipolis Ferry	28,859
Weirton Steel Corp.	Weirton	14,256
PPG Ind. Inc.	New Martinsville	8,630

* 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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Dishonorable Discharge

The Ohio River in West Virginia

Total toxic pollution reported (1990-1994): 4,743,247 Pounds

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

Facility	City	Toxic chemical release to water (pounds)
Weirton Steel Corp.	Weirton	1,334,595
Wheeling-Pittsburgh Steel Corp	Follansbee	1,197,600
Cytec Ind.	Belmont	856,876
Bayer Corp.	New Martinsville	428,462
Du Pont	Washington	317,097
PPG Ind. Inc.	New Martinsville	212,083
Shell Chemical Co.	Apple Grove	179,346
Akzo Nobel Chemicals Inc.	Gallipolis Ferry	103,769
OSI Specialties Inc.	Sistersville	54,518
L. B. Foster Co.	Washington	

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

Chemical	Toxic chemical release to waterbody (pounds)
Ammonia	3,185,443
Ammonium sulfate (solution)	310,000
Ethylene glycol	231,842
Manganese compounds	97,700
Zinc compounds	95,684
Chromium compounds	85,466
Chlorobenzene	81,409
Cyanide compounds	79,600
Manganese	74,130
Chlorine	69,938

‡ 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 Ohio River in West Virginia (1990-1994).**

Carcinogens	80,188 Pounds
Persistent Toxic Metals	459,970 Pounds
Reproductive Toxins	104,683 Pounds
Total‡	**586,129 Pounds**

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

Top dischargers of carcinogens to the Ohio River in West Virginia (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
Weirton Steel Corp.	Weirton	29,422
Bayer Corp.	New Martinsville	16,260
PPG Ind. Inc.	New Martinsville	13,130
Du Pont	Washington	12,298
Cytec Ind.	Belmont	3,300

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

Facility	City	Persistent toxic metals released to water (lbs)
Weirton Steel Corp.	Weirton	409,571
Bayer Corp.	New Martinsville	22,394
Hanlin Chemicals*	Moundsville	5,565
American Alloys Inc.	New Haven	5,421
L. B. Foster Co.	Washington	4,072

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

Facility	City	Reproductive toxins** released to water (lbs)
OSI Specialties Inc.	Sistersville	46,171
Akzo Nobel Chemicals Inc.	Gallipolis Ferry	28,859
Weirton Steel Corp.	Weirton	12,230
PPG Ind. Inc.	New Martinsville	8,630
Quaker State Corp.	Newell	3,500

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

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Dishonorable Discharge

The Kanawha River in West Virginia

Total toxic pollution reported (1990-1994): 2,320,910 Pounds

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

Facility	City	Toxic chemical release to water (pounds)
Du Pont	Belle	1,228,619
Olin Corp.	South Charleston	498,283
Monsanto Co.	Nitro	286,724
FMC Corp.	South Charleston	187,586
FMC Corp.	Nitro	61,131
Union Carbide C & P Co.	Institute	19,027
Union Carbide Corp.	South Charleston	14,621
Rhone-Poulenc Institute Plant	Institute	13,715
Occidental Chemical Corp.	Belle	7,405
Arco Chemical Co.*	Institute	

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

Chemical	Toxic chemical release to waterbody (pounds)
Ammonia	1,874,144
Methanol	232,622
Ethylene glycol	52,934
Toluene	37,015
Aniline	31,116
Acetone	25,256
n-Butyl alcohol	14,944
Xylene (mixed isomers)	13,714
Hydrogen cyanide	5,418
Formaldehyde	4,600

‡ 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 Kanawha River in West Virginia (1990-1994).**

Carcinogens	45,978 Pounds
Persistent Toxic Metals	482 Pounds
Reproductive Toxins	58,053 Pounds
Total‡	**104,226 Pounds**

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

Top dischargers of carcinogens to the Kanawha River in West Virginia (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
Monsanto Co.	Nitro	30,882
Rhone-Poulenc Institute Plant	Institute	7,147
Du Pont	Belle	5,778
Arco Chemical Co.*	Institute	1,935

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

Facility	City	Persistent toxic metals released to water (lbs)
Du Pont	Belle	482

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

Facility	City	Reproductive toxins** released to water (lbs)
Monsanto Co.	Nitro	47,129
Union Carbide C & P Co.	Institute	4,725
Rhone-Poulenc Institute Plant	Institute	2,944
FMC Corp.	Nitro	2,000
AC & S Inc.	Nitro	652

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

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Dishonorable Discharge

Harmon Creek in West Virginia

Total toxic pollution reported (1990-1994): 409,012 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to Harmon Creek in West Virginia (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
Weirton Steel Corp.	Weirton	409,012

Table 2. Toxic chemicals discharged in the greatest amounts to Harmon Creek in West Virginia (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Ethylene glycol	126,773
Sulfuric acid	71,800
Manganese compounds	64,666
Manganese	46,240
Zinc compounds	32,673
Zinc (fume or dust)	19,492
Antimony compounds	14,694
Antimony	10,373
Chromium compounds	7,986
Nickel compounds	6,873

‡ 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 Harmon Creek in West Virginia (1990-1994).**

Carcinogens	11,414 Pounds
Persistent Toxic Metals	207,538 Pounds
Reproductive Toxins	2,026 Pounds
Total‡	**207,538 Pounds**

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

Top dischargers of carcinogens to Harmon Creek in West Virginia (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
Weirton Steel Corp.	Weirton	11,414

Top dischargers of persistent toxic metals to Harmon Creek in West Virginia (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)
Weirton Steel Corp.	Weirton	207,538

Top dischargers of reproductive toxins to Harmon Creek in West Virginia (1990-1994).**

Facility	City	Reproductive toxins** released to water (lbs)
Weirton Steel Corp.	Weirton	2,026

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Dishonorable Discharge

The Greenbrier River in West Virginia

Total toxic pollution reported (1990-1994): 344,195 Pounds

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

Facility	City	Toxic chemical release to water (pounds)
Howes Leather Co. Inc.	Frank	344,195

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

Chemical	Toxic chemical release to waterbody (pounds)
Ammonia	341,240
Chlorine	2,700
Chromium 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 Greenbrier River in West Virginia (1990-1994).**

Carcinogens	0 Pounds
Persistent Toxic Metals	250 Pounds
Reproductive Toxins	0 Pounds
Total‡	**250 Pounds**

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

Top dischargers of carcinogens to the Greenbrier River in West Virginia (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)

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

Facility	City	Persistent toxic metals released to water (lbs)
Howes Leather Co. Inc.	Frank	250

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

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

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

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Dishonorable Discharge

Twelve Pole Creek in West Virginia

Total toxic pollution reported (1990-1994): 269,835 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to Twelve Pole Creek in West Virginia (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
Kanawha River Terminals Inc.	Ceredo	269,835

Table 2. Toxic chemicals discharged in the greatest amounts to Twelve Pole Creek in West Virginia (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Ammonia	269,835

‡ 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 Twelve Pole Creek in West Virginia (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 Twelve Pole Creek in West Virginia (1990-1994).**

Top dischargers of carcinogens to Twelve Pole Creek in West Virginia (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)

Top dischargers of persistent toxic metals to Twelve Pole Creek in West Virginia (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)

Top dischargers of reproductive toxins to Twelve Pole Creek in West Virginia (1990-1994).**

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

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

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Dishonorable Discharge

Sugar Camp Run in West Virginia

Total toxic pollution reported (1990-1994): 110,666 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to Sugar Camp Run in West Virginia (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
OSI Specialties Inc.	Sistersville	110,666

Table 2. Toxic chemicals discharged in the greatest amounts to Sugar Camp Run in West Virginia (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Glycol ethers	68,037
Methanol	21,819
2-Methoxyethanol	11,272
Toluene	3,466
Chloroethane	2,582
Chloromethane	2,067
Chlorine	701
Propylene oxide	622

‡ 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 Sugar Camp Run in West Virginia (1990-1994).**

Carcinogens	3,206 Pounds
Persistent Toxic Metals	0 Pounds
Reproductive Toxins	82,800 Pounds
Total‡	**86,006 Pounds**

Table 4. Polluters reporting the greatest amounts of carcinogens, persistent toxic metals, and reproductive toxins** discharged to Sugar Camp Run in West Virginia (1990-1994).**

Top dischargers of carcinogens to Sugar Camp Run in West Virginia (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
OSI Specialties Inc.	Sistersville	3,206

Top dischargers of persistent toxic metals to Sugar Camp Run in West Virginia (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)

Top dischargers of reproductive toxins to Sugar Camp Run in West Virginia (1990-1994).**

Facility	City	Reproductive toxins** released to water (lbs)
OSI Specialties Inc.	Sistersville	82,800

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

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Dishonorable Discharge

Lens Creek in West Virginia

Total toxic pollution reported (1990-1994): 6,000 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to Lens Creek in West Virginia (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
Liquid Carbonic Ind Corp.	Marmet	6,000

Table 2. Toxic chemicals discharged in the greatest amounts to Lens Creek in West Virginia (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Ammonia	6,000

‡ 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 Lens Creek in West Virginia (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 Lens Creek in West Virginia (1990-1994).**

Top dischargers of carcinogens to Lens Creek in West Virginia (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)

Top dischargers of persistent toxic metals to Lens Creek in West Virginia (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)

Top dischargers of reproductive toxins to Lens Creek in West Virginia (1990-1994).**

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

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

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Dishonorable Discharge

Reynold's Branch in West Virginia

Total toxic pollution reported (1990-1994): 4,575 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to Reynold's Branch in West Virginia (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
Occidental Chemical Corp.	Belle	4,575

Table 2. Toxic chemicals discharged in the greatest amounts to Reynold's Branch in West Virginia (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Chloroform	2,108
Dichloromethane	2,075
Carbon tetrachloride	392

‡ 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 Reynold's Branch in West Virginia (1990-1994).**

Carcinogens	4,575 Pounds
Persistent Toxic Metals	0 Pounds
Reproductive Toxins	0 Pounds
Total‡	**4,575 Pounds**

Table 4. Polluters reporting the greatest amounts of carcinogens, persistent toxic metals, and reproductive toxins** discharged to Reynold's Branch in West Virginia (1990-1994).**

Top dischargers of carcinogens to Reynold's Branch in West Virginia (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
Occidental Chemical Corp.	Belle	4,575

Top dischargers of persistent toxic metals to Reynold's Branch in West Virginia (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)

Top dischargers of reproductive toxins to Reynold's Branch in West Virginia (1990-1994).**

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

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

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Dishonorable Discharge

Simmons Creek in West Virginia

Total toxic pollution reported (1990-1994): 2,600 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to Simmons Creek in West Virginia (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
Du Pont	Belle	2,600

Table 2. Toxic chemicals discharged in the greatest amounts to Simmons Creek in West Virginia (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Methyl ethyl ketone	2,400
Methanol	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 Simmons Creek in West Virginia (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 Simmons Creek in West Virginia (1990-1994).**

Top dischargers of carcinogens to Simmons Creek in West Virginia (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)

Top dischargers of persistent toxic metals to Simmons Creek in West Virginia (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)

Top dischargers of reproductive toxins to Simmons Creek in West Virginia (1990-1994).**

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

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

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Dishonorable Discharge

Buzzard Run in West Virginia

Total toxic pollution reported (1990-1994): 2,110 Pounds

Table 1. Polluters discharging the greatest amounts of toxic chemicals to Buzzard Run in West Virginia (1990-1994).

Facility	City	Toxic chemical release to water (pounds)
Corning Consumer Prods. Co.	Martinsburg	2,110

Table 2. Toxic chemicals discharged in the greatest amounts to Buzzard Run in West Virginia (1990-1994).

Chemical	Toxic chemical release to waterbody (pounds)
Zinc compounds	1,046
Arsenic compounds	549
Barium compounds	515

‡ 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 Buzzard Run in West Virginia (1990-1994).**

Carcinogens	549 Pounds
Persistent Toxic Metals	2,110 Pounds
Reproductive Toxins	0 Pounds
Total‡	**2,110 Pounds**

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

Top dischargers of carcinogens to Buzzard Run in West Virginia (1990-1994).**

Facility	City	Carcinogens** released to water (lbs)
Corning Consumer Prods. Co.	Martinsburg	549

Top dischargers of persistent toxic metals to Buzzard Run in West Virginia (1990-1994).

Facility	City	Persistent toxic metals released to water (lbs)
Corning Consumer Prods. Co.	Martinsburg	2,110

Top dischargers of reproductive toxins to Buzzard Run in West Virginia (1990-1994).**

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

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

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