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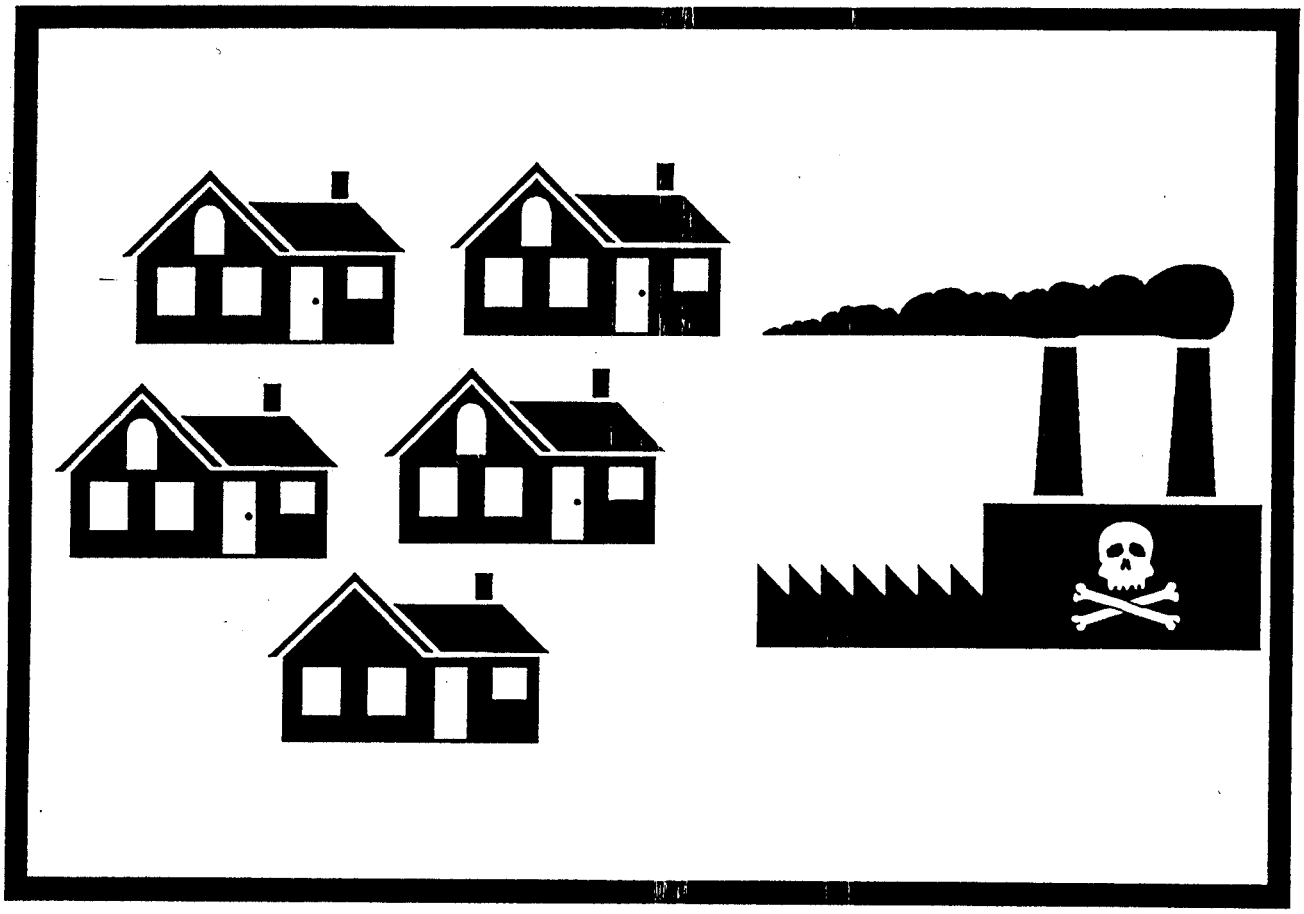
Poisons in Our Neighborhoods

Toxic Pollution in Georgia



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Summary

Poisons in Our Neighborhoods summarizes manufacturing companies' toxic chemical pollution for 1990, the most recent year for which information is available. The report uses data that individual manufacturing facilities were required to file with the Environmental Protection Agency under the Emergency Planning and Community Right-to-Know Act, Title III of the Superfund Amendments and Reauthorization Act of 1986. Poisons in Our Neighborhoods is unique because it gives a comprehensive overview of manufacturer's toxic chemical releases and provides information about the potential health effects of the chemicals they released.

- The state's manufacturers released 101.5 million pounds of toxic chemicals. The top ten companies accounted for 45 percent of this total. The leading companies were Union Camp Corp., Georgia-Pacific Corp., and Chemical Products Corp.. The leading facilities were Union Camp Corp. (Savannah), Chemical Products Corp. (Cartersville), and Macon Kraft Inc. (Macon).

- The largest releases of toxic chemicals were reported in Chatham, Richmond, and Glynn counties.

- The State's manufacturers released 12.2 million pounds of known, probable or suspected carcinogens. The parent company Merck & Co. Inc. released the most known, probable, or suspected carcinogens, and its Merck & Co. Inc. Flint River Plant of Albany was the facility releasing the most known, probable or suspected carcinogens. Dougherty was the county in which the largest amount of known, probable or suspected carcinogens was released.

- The state's manufacturers released 27.9 million pounds of chemicals known to cause, or suspected of causing birth defects. The company releasing the most chemicals known to cause, or suspected of causing birth defects was Ringier America Inc., and its Evans plant, Ringier America Inc., was the facility releasing the largest amount of these chemicals. The county in which the largest amount of toxic chemicals known to cause or suspected of causing birth defects was released was Fulton.

- The zip codes with the largest releases were 31401 (Savannah), 30120 (Cartersville), 31206 (Macon), 31521 (Brunswick), and 30903 (Augusta).

- Discharges of toxic chemicals to air usually represent the most direct health threat because breathing polluted air is the principal means by which people are exposed to toxic substances. Specific federal emission standards or monitoring requirements exist for only seven toxic air pollutants, although many known and suspected carcinogens routinely are discharged into the air. In 1990, manufacturing facilities in Georgia reported releasing 72.5 million pounds of toxic chemicals into the air. The company reporting the greatest releases into the air was Union Camp Corp., and its Savannah plant, Union Camp Corp., was the facility reporting the greatest releases into the air. The county with the largest reported air releases was Chatham.

- In 1990, manufacturing facilities in Georgia reported releasing 4.3 million pounds of toxic chemicals into surface water. The company reporting the greatest releases to surface water was

Arcadian Corp., and its Arcadian Corp. Savannah Plant of Port Wentworth was the facility reporting the greatest releases to surface water. Chatham county reported the greatest amount of water releases.

- The paper industry was responsible for the largest share of reported toxic pollution, accounting for 25 percent of the total.

- This reported toxic waste output is only a part of the state's total burden of toxic chemicals; small employers and non-manufacturing businesses, such as utilities, are not required to report their emissions under the Federal Right-To-Know law, nor does the law cover federal facilities or motor vehicle emissions. Also, the EPA estimated that one out of every three facilities required to file TRI reports failed to do so in 1989.[1]

Toxic Pollution Summary
Georgia, 1990

	All Manufacturers (1)	Leading County	Leading Company	Leading Facility
Total Releases	101.5 million	Chatham	Union Camp Corp.	Union Camp Corp.
Carcinogens (2)	12.2 million	Dougherty	Merck & Co. Inc.	Merck & Co. Inc. Flint River Plant (Albany)
Birth Defects (3)	27.9 million	Fulton	Ringier America Inc.	Ringier America Inc. (Evans)
Air Releases	72.5 million	Chatham	Union Camp Corp.	Union Camp Corp. (Savannah)
Water Releases	4.3 million	Chatham	Arcadian Corp.	Arcadian Corp. Savannah Plant (Port Wentworth)

(1) Releases are in pounds.
(2) Chemicals known to cause or suspected of causing cancer.
(3) Chemicals known to cause or suspected of causing birth defects.

[1] U.S. EPA, *1989 Toxics Release Inventory Figures Show Downward Trend*, May 16 1991.

Background

Purpose of this Report

This report summarizes the toxic chemical releases into land, air, water, public sewage treatment plants, and off-site treatment and disposal facilities by ~~Nebraska~~ Glorbia's manufacturers. The report:

- identifies the individual manufacturing facilities and parent companies that released the largest amount of toxic chemicals in the state;
- analyzes where toxic wastes went after the companies released them;
- identifies by Standard Industrial Classification codes the industries that released the most toxic chemicals; and,
- lists the companies and facilities releasing the largest amounts of chemicals known or suspected of causing cancer and birth defects.

Toxic Chemical Release Reporting Requirements

Title III, section 313 of the Superfund Amendments and Reauthorization Act of 1986 requires every manufacturing company with ten or more employees using or manufacturing certain quantities of 332 toxic chemicals and chemical categories to file Toxic Release Inventory (TRI) forms with U.S. EPA and the appropriate state agency by July 1, 1988, and annually thereafter.

For manufacturers or processors (those who produce, compound, import, or prepare chemicals), the threshold for reporting was set at 75,000 pounds in 1987, 50,000 pounds in 1988, and 25,000 pounds in subsequent years. For chemical "users" (anyone other than a manufacturer or processor) reporting is required if a company uses 10,000 pounds or more annually of a given chemical.

Significance of the Data

The TRI gives citizens previously unavailable information about the toxic waste releases of the largest industries in their communities. Armed with TRI information, people can take local action to protect themselves from the hazards of exposure to toxic chemicals. The TRI also provides new information to local, state, and federal regulators, since many of the chemical releases that industries are now required to report have never been regulated under any environmental protection laws. Furthermore, these reports

give plant managers and company executives a comprehensive overview of waste produced by their plants.

TRI Reporting Requirements

- the name, location and principal business activity of the facility, and the name of the parent company;
- whether the chemical is used, manufactured or processed and the general category of use;
- an estimate of the maximum amount of the chemical present during the past year;
- the waste treatment or disposal methods employed,
- the annual quantity of a chemical entering air, water, soil, public sewage treatment plants, and off-site treatment or disposal facilities.
- An optional section of the reporting form gives facilities the opportunity to document any waste reduction efforts they might have undertaken.

Limitations of the Data

For several reasons the TRI reports fail to give a complete picture of the releases of toxic chemicals in our communities. The TRI reports only provide information about chemical releases. They do not explain the health or environmental risks associated with the releases.

The TRI reports significantly under-represent the problem of toxic chemical releases. A recent study by the Natural Resources Defense Council (NRDC) estimates that the current TRI reporting requirements allow most toxic chemical releases to remain unreported.[2] This confirms an earlier conclusion of the Congressional Office of Technology Assessment.[3] The United States Office of Technology Assessment estimates that the total quantity of toxic substances that is emitted but not reflected in the inventory could be as high as 95%.[4] Three different weaknesses in the reporting structure contribute to the under-reporting problem.

First, reporting is required of manufacturing facilities only. Facilities that fall outside the Standard Industrial Classification (SIC) codes 20-39 are exempt from disclosure. Thus, toxic emissions from vehicles, agriculture, most dry cleaning establishments, gas stations, solid and hazardous waste landfills, incinerators, public utilities and sewage treatment plants are not covered. In addition, all government

[2] Sheiman, Deborah A., *The Right to Know More*, Natural Resources Defense Council, May, 1991.

[3] U.S. Congress Office of Technology Assessment, *From Pollution to Prevention: A Progress Report on Waste Reduction*, (Washington, D.C., June, 1987).

[4] U.S. General Accounting Office, *EPA's Toxic Release Inventory Is Useful But Can Be Improved*, June 1991, page 20.

facilities are exempt despite the billions of dollars of cleanup costs that taxpayers will spend over the next several decades to clean up the toxic wastes from military manufacturing facilities.[5]

Second, the TRI program covers a very limited number of toxic chemicals. Even some of the chemicals regulated under other environmental laws -- the Clean Water Act, the new Clean Air Act, the Resource Conservation and Recovery Act, and the Federal Insecticide, Fungicide and Rodenticide Act -- are not included in the reporting system. The TRI list also omits many of the chemicals recognized as known or probable carcinogens by federal agencies.

Third, enforcement of the reporting requirement is lax. Only two out of three facilities required to file toxics release reports actually do so, according to EPA.[6] Neither EPA nor most state agencies have yet established aggressive enforcement programs to ensure that all the manufacturers required to file TRI reports have, in fact, complied with the law.

The data are also subject to estimation errors by manufacturers and data input errors by the manufacturers and EPA. The raw data on which this report is based were provided by the manufacturers themselves, as required by the federal Emergency Planning and Community Right-to-Know Act. EPA enters the data submitted by the facilities into a computer data base. Although EPA takes many steps to assure the quality of its data, there are still occasional errors. Citizens Fund attempted to contact the environmental engineers of 50 facilities reporting the greatest reductions in amounts released from 1989 levels in order to verify EPA's data. Some facilities did not respond to Citizens Fund's inquiries, and most others confirmed the EPA computer data. In the few cases where this process uncovered significant data entry errors by EPA, the facilities' totals were adjusted accordingly. However, with approximately 20,000 facilities submitting nearly 100,000 forms, there was no way to comprehensively verify EPA's data.

Toxic Release Destinations

This report provides a detailed account of manufacturer's releases of toxic chemicals into the air and water. Although these two types of releases probably pose the greatest direct risk to health and the environment, the tendency to concentrate on air and water releases should in no way be seen to diminish the risks posed by releases to other mediums. The Community Right-to-Know Act also requires facilities to report toxic chemicals injected underground, released to the land, sent to public sewage treatment plants, and shipped off-site.

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[5] Citizens Fund, *Cancer at the Pump* (1989) discusses the hazard of increased use of benzene in gasoline.

[6] U.S. EPA, *1989 Toxics Release Inventory Figures Show Downward Trend*, May 15, 1991.

Several large manufacturing facilities dispose of their toxic waste by pumping it under high pressure into underground geological formations that, in theory, isolate the waste from sources of drinking water. This method of disposal is referred to as underground injection or deep well injection. Federal law requires no groundwater monitoring for injection well operations.[7] This absence of monitoring can mean that regulators discover leaks in wells long after they have occurred. According to an EPA report to Congress, underground injection failures have threatened drinking water. Documented examples include:[8]

- A Hammermill well in Erie, Pennsylvania, was placed on the Superfund list when excessive injection pressures forced waste into an improperly abandoned well.
- A well at a Tenneco facility in Chalmette, Louisiana, leaked into an underground source of drinking water. Tenneco was required to abandon the well and clean up the contamination.
- Violations of pH limits at the Velsicol Chemical Corporation in Beaumont, Texas, caused the well casing to corrode, allowing the waste to escape the permitted injection zone. Velsicol was required to clean up the contamination.
- A Chemical Waste Management facility in Vickery, Ohio, leaked some 60 million gallons of hazardous waste before regulators detected that the wells had failed. The state fined the company $12.5 million for these and other violations at the site.

The EPA land release category only includes toxic chemicals released to on-site land locations. This can include landfills, lagoons and in some cases accidental spills. Land disposal is not considered a safe method of waste disposal. In fact, preventing future Superfund cleanups by minimizing land disposal of hazardous waste was a key component of the 1984 amendments to the Resource Conservation and Recovery Act, which limited the types of waste which could be discharged to land.

Many facilities send toxic waste to public sewage treatment plants, an equally problematic method of waste disposal. With few exceptions, public sewage treatment plants are designed to manage residential wastes, not toxic chemicals. When sent to sewage treatment plants, toxic chemicals are often volatized, adding to air releases, or are concentrated in the sludge, which is either sent to a landfill, incinerated, or applied to land.

Off-site transfers involve sending waste to landfills, incinerators, or treatment facilities. Off-site shipments of waste create many environmental risks such as transportation accidents, spills, fugitive emissions, and incomplete combustion of waste. EPA acknowledges hazardous waste landfills are the

[7] U.S. EPA, Office of Drinking Water, *Report to Congress on Injection of Hazardous Waste*, May, 1985, p. VI-13.

[8] *Ibid.*, pp. VI 18-20.

least desirable form of waste management, and incinerators add to air pollution. The track record of these facilities should not inspire confidence that they will be able to contain toxic waste over the long term.

No known method of waste disposal is free of health and environmental risks. Eliminating the use of toxic chemicals or reducing toxic releases at the source is the only solution to the toxic release problem.

Are Facilities Really Cutting Back Their Toxic Pollution?

Manufacturing facilities reported an 11 percent reduction in their toxic releases in 1990, compared to their 1989 TRI reports.[9] Although some facilities have taken steps to eliminate the use of toxic chemicals, reduce their waste at the source, or, more frequently, install pollution control equipment, there is little evidence to suggest that a large number of facilities have cut their pollution substantially or that the reductions that have occurred will be permanent.

Many of the reductions in toxic releases were due less to permanent waste reduction measures than to changes in the way reporting facilities estimated their wastes, reductions in production for the current year, or misunderstanding of EPA reporting requirements. Some companies reported significant decreases because they took advantage of a loophole in the law that permits them not to report toxics shipped off-site so long as the wastes are ostensibly shipped to a waste recycler.[10] Three types of independent bases exist to support this conclusion. First, a Citizens Fund survey of facilities reporting the largest decreases from 1989 to 1990; second, analysis of the reported estimation techniques used by companies to calculate their wastes; and, third, the frequency of waste minimization activities as optionally reported by the companies filing TRI forms.

Interviews with Facility Representatives

To determine how facilities were reducing their toxic releases, Citizens Fund attempted to contact officials at the 50 facilities that reported the largest reductions in toxic releases from 1989 to 1990. The 47 facility representatives that responded provided varying levels of information about how their facilities achieved the reductions they reported.

The main reasons for reductions at these 47 facilities were changes by EPA in the chemical releases that had to be reported, changes in waste estimation techniques, lower levels of production, or other factors

[9] On May 27, 1992 the EPA issued a press release stating that "industrial releases of toxic chemicals into the nation's environment had declined by 600 million pounds, or 11 percent, from 1989 to 1990." Conversations with EPA staff indicate that EPA excluded changes associated with the delisting of chemicals such as ammonium sulfate.

[10] After the 1990 reporting year, manufacturers will no longer be able to use this loophole which was closed with the passage of the Pollution Prevention Act of 1990

beyond the control of the facility, such as decreased runoff due to less rainfall. The results of these interviews are presented in Appendix XI.

Our interviews, however, did find some encouraging examples of real reductions of toxic releases. Most of the facilities reported at least some reductions resulting from specific efforts to reduce the use of toxic chemicals or control pollution. Following are some of the most dramatic examples of source reduction:

- 3M Chemolite Center in Cottage Grove, MN reduced emissions by almost 8 million pounds by eliminating the use of major solvents in its processes. This is part of an overall corporate pledge to eliminate solvents from its waste stream.

- Fort Howard Steel in Green Bay, WI reduced its emissions by almost 4 million pounds by stopping its use of solvents and replacing them with another process. This change in the production line lowered emissions to zero by 1991.

- GMC Central Foundry Division in Defiance, OH reduced its emissions by over 6 million pounds after simplifying its process to use less foam and fewer casting blocks.

Clearly, significant reductions of toxic chemical releases are possible. The TRI reports have apparently provided some motivation for reduction. Perhaps with greater motivation from increased public scrutiny and tighter regulation, more companies would find ways of reducing their toxic releases.

On the other hand, some companies figured out that they could reduce their reported wastes by merely changing the way they report them. These companies statistically reduced their waste through a recycling loophole.[11] In 1990, the EPA did not require companies to report toxics sent offsite to recycling facilities. Many of these "recycling" facilities simply incinerated the toxic wastes in furnaces or kilns. While incineration does destroy some chemicals, others are still released into the air. By sending waste to these facilities, companies continued to contribute to the overall toxic problem, while receiving credit for apparent reductions.

- Upjohn's production facility in Kalamazoo, MI, reported a decrease of over eleven million pounds in 1990 from the previous year. However, the volume of waste products apparently remained the same, because the company did not report toxic wastes sent to a reuse facility.

- Charter Processing in Saukville, WI, seemingly reduced its emission of sulfuric acid by over five million pounds. However, this was due entirely to the recycling loophole.

[11] *The "Recycling" Loophole in the Toxic Release Inventory: Out of Site, Out of Mind*, Working Group on Community Right-to-Know, National Toxics Campaign Foundation's Industrial Pollution Prevention Project, Environmental Defense Fund's Environmental Information Exchange and Citizens Fund, March 1991.

Beginning with calendar year 1991, companies can no longer use these loopholes. Passage of the Pollution Prevention Act of 1990 now requires an accounting of these transfers.

Waste Minimization Information

Each TRI reporting form provides manufacturers with an opportunity to explain how they achieved reduction in toxic releases. Submitting this information is now voluntary; with the enactment of the Pollution Prevention Act of 1990, facilities will have to provide this information beginning in the 1991 reporting year.

Currently, facilities provide little documentation of the specific measures undertaken to reduce pollution. Of the 23,648 facilities that submitted TRI forms to EPA, only 3,938 facilities, or 17 percent, provided any voluntary waste minimization information. Moreover, out of a total of 83,393 forms submitted on specific chemicals, waste minimization reports were filed for only 9,601, just 12 percent of the total. In response to our survey, however, some companies did identify changes made in their processes to contain and minimize wastes they were producing.

- Unocal's facility in Kenai, Alaska spent million of dollars to recover ammonia back into the system. This ammonia had previously been vented into the atmosphere.

- Magnesium Corporation in Tooele, UT reduced its emissions after installing new incinerators and scrubbers. The improved efficiency accounted for a substantial decrease.

Industry's failure to document waste minimization efforts raises questions about the validity of reported reductions in pollution and a commitment to making changes. Compared with the dramatic overall reductions industry reported, the dearth of information provided about minimization efforts suggests that, in fact, industry cannot document its claims. If facilities are seriously making changes to reduce their waste, as many of them claim, why do they not take advantage of the TRI reporting requirements to demonstrate that they are, in fact, making progress? By sharing this information, industry could demonstrate its progress. By withholding it, they lend credence to the view that they are not truly reducing their toxic releases.

How Facilities Estimated Their Toxic Releases

The lack of information about the methods facilities used to estimate their releases also suggests that any year-to-year comparison of releases would be precarious. For this reason alone, the public should greet industries' 11 percent overall reported reduction in 1990 with considerable skepticism.

Companies are not required to actually monitor their releases. Instead, they are free to rely on imprecise estimation techniques. When filling out their annual TRI forms facilities must indicate which of four methods they used to estimate their releases. Monitoring and [illegible]

provide the most accurate estimates. Published emissions factors and the use of "other unspecified methods" probably result in the least verifiable and least accurate estimates. According to the TRI data, only 31 percent of the estimates used the more accurate methods.

Source Reduction vs. Post-Production Pollution Control

Source reduction and post-production control are often confused, with industry complaining loudly about the cost of pollution control equipment and rarely mentioning the alternative--not producing the wastes to begin with. The purpose of the Toxic Release Inventory legislation was to provide an avenue for industry to quantify their wastes and identify means of reducing these wastes.

Post-production pollution prevention usually involves the installation of expensive equipment such as incinerators and stack scrubbers. These controls, however, do little more than alter the form of the pollution or transfer it to a different media. For example, fly ash from incinerators must ultimately be landfilled and in some cases may be more toxic than the original waste.

Source reduction, on the other hand, generally involves less expensive technology and can often be achieved through simple housekeeping and maintenance measures, product reformulation, process modification aimed at increased efficiency or waste recovery and reuse. Source reduction can also be easily achieved by replacing a toxic ingredient in the production process with a non-toxic alternative.

An excellent example of source reduction would be a switch on the part of agriculture to more sustainable methods utilizing organic fertilizers and biological pest control. Twenty-three of the 100 facilities releasing the most toxic waste are involved in the production of either phosphatic or nitrogenous fertilizers or pesticides and other agricultural chemicals. Together, these twenty-three facilities were responsible for releasing nearly two billion pounds of toxic wastes in 1990. Moreover, once applied to crops, pesticides may expose agricultural workers to carcinogenic and birth defect causing chemicals and contaminate drinking water by leaching into aquifers or running off into reservoirs.

Benefits of Source Reduction

The expense of pollution control and its relative lack of success at providing a realistic solution to the problem of pollution suggests the need for a fundamental shift away from traditional ways of thinking about pollution. Industry needs to direct its energies toward practices within the manufacturing process that reduce, avoid or eliminate the generation of toxic waste. Not only will this serve to protect workers, public health and the environment, but it may well prove economically beneficial to the facilities implementing source reduction policies.

Industry literally spends millions of dollars a year transporting hazardous wastes to treatment and disposal facilities and millions more in disposal fees and taxes. Installation of equipment to capture solvents, for example, would save these costs and allow the facilities to recycle the captured solvents back into the production process instead of continually purchasing new materials. In fact, the chairman and chief

executive officer of Monsanto Co. recently reported that his company may be losing $125 million per year by not recovering wastes.

According to a 1986 Congressional Office of Technology Assessment study, affordable technology exists to allow industry to cut its toxic waste by half.[12] Some companies have begun to take steps in this direction and have found that it does benefit them economically to reduce their wastes at the source. For example:

- 3M Corporation claims to have saved $426 million in the United States since implementing its Pollution Prevention Pays program in 1975.[13]

- One 3M project involved the re-design of a resin spray booth which had been producing about 500,000 pounds of overspray per year that required special incineration disposal. New equipment was installed to eliminate excessive overspray. Efficiency was increased to provide a net reduction in the total amount of resin used, saving more than $125,000 annually, on a $45,000 in equipment investment, according to 3M.[14]

- A Monsanto facility in Florida has instituted a process to capture solvents in a mineral oil bath before they are emitted through the smoke stacks so that it can be reused. Monsanto estimates that this has cut toxic air emissions by 90 percent since 1987 and saved a few million dollars in raw material costs.[15]

- The Du Pont facility in Beaumont, Texas has reported saving $1 million per year while reducing wastes by two-thirds after adjusting the production process to use less of just one raw material.[16]

Unfortunately, however, these success stories do not represent the norm. Industry needs to follow these examples and break away from its short-term pollution control strategies to develop long-term plans for reducing or eliminating the production of toxic wastes. 3M, for example, has a corporate policy of reducing all emissions 90 percent by the year 2000.

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[12] U.S. Congress, Offiee of Technology Assessment, *Serious Reduction of Hazardous Waste: For Pollution Prevention and Industrial Efficiency*, OTA-ITE-317 (Washington, DC) September, 1986.

[13] *The New York Times*, "Hutchinson No Longer Holds Its Nose," Feb, 3, 1991.

[14] "Background Information on the 3M 'Pollution Prevention Pays' Program," April 1990.

[15] *The Wall Street Journal*, "Cleaning Up: Chemical Firms Find That It Pays to Reduce Pollution at Source," June 11, 1991.

[16] *Ibid.*

Overall, the Congressional Budget Office has projected savings of $2.7 billion in annual expenditures if industry takes advantage of opportunities to reduce its waste.[17] A report by the Office of Technology Assessment concluded that:

> competitive operations support the argument that waste reduction promotes industrial revitalization and economic growth....A major focus on waste reduction raises the concern that it might, through the costs of implementation, contribute to what is called the 'deindustrialization' of America. However, those who have implemented waste reduction effectively generally see it as a way to improve profitability and competitiveness.[18]

The same OTA report also found that other countries may be gaining a competitive edge over United State industry due to implementation of source reduction programs. The report states:

> Most European governments have exercised more leadership in waste reduction and have devoted more money to waste reduction than the U.S. West European experiences may also present a challenge to the U.S. because waste reduction has ben used as a tool to improve industrial efficiency, growth, and international competitiveness.

Despite the apparent benefits, and the fact that some individual companies have moved aggressively toward waste reduction, the OTA concluded that waste reduction is not being carried out on a widespread scale and that substantial opportunities exist for reducing waste. The main reasons cited by the OTA and others for slow progress are not technological but institutional barriers within industry, including a lack of commitment by top corporate management.

Corporate Executive NIMBYs
Toxic Polluters Don't Pollute Their Own Backyards

In recent years, as local residents have organized to oppose efforts by large industrial corporations to locate facilities that pollute the environment and endanger public health, corporate executives have denigrated, demeaned and disingenuously labeled such democratic opposition as the NIMBY ("Not in My Backyard") syndrome. An analysis of toxic chemical releases by zipcode, however, demonstrates beyond any doubt that the true Nimbys are not local residents whose lives and communities are threatened with polluting facilities, but rather the chief executives of the largest toxic polluters in the nation. The corporate Nimby executives would never tolerate a large waste site or toxic chemical incinerator near *their* homes and families. They are the ones who live far away from their plants, far away from the

[17] U.S. Congressional Budget Office, *Hazardous Waste Management: Recent Changes and Policy Alternatives*, (Washington, D.C.), 1985.

[18] Office of Technology Assessment, *Serious Reduction of Hazardous Waste*, page 6.

environmental and health consequences of their decisions. They live in communities where there is no industrial toxic waste to threaten their children and grandchildren at play in their backyards.

Analyzing the toxic chemical releases for the 50 largest industrial toxic polluters by zipcode and comparing those releases to the releases in the zipcodes of the companies' chief executives, it was found that 230 times more toxic waste was emitted in the neighborhoods near the plants than in the communities of the chief officers of the companies. For the top 50 toxic polluters an average of 32,000 pounds of waste was emitted in communities where the chief executives lived compared to more than 7.4 *million* pounds of toxic chemicals released in the neighborhoods in which the chief executives's facilities were located.

Even more startling is the fact that over 70 percent of the executives lived in communities where the toxic emissions from industrial facilities were zero. A good example is the nation's largest industrial toxic polluter – Du Pont. The chairman of the board and chief executive officer of this $39 billion company, Edgar Woolard, lives in Greenville, Deleware, a lush area where no industrial plants are located and where no toxic chemicals are released into the environment. Contrast this to the 2.8 million pounds of toxic chemicals released by Du Pont's Spruance Plant in Richmond, Virginia or the 50 million pounds in New Johnsonville, Tennessee.

In hundreds of communities across America, citizens are inundated with industrial toxic waste. Whether it is released into the air they breathe, the water they drink or the food they eat, toxic chemicals have become a daily hazard which is not faced by the executives who are directly responsible for causing the pollution.

Based on this analysis, it is reasonable to conclude that chief executives of polluting firms are more likely to delay investments in source reduction since they and their families do not risk exposure to the toxic chemicals released by their company's facilities. Perhaps if these executives lived in communities close to their plants and faced the same hazards that those communities face, they would have a much different attitude towards their toxic waste production. Until business leaders recognize the public health risk and social consequences of their decisions, the terrible problem of toxic emissions and unnecessary risks to human health will continue.

Toxic Releases By Zipcode for Chief Executives and Their Facilities				
Company	**Corporate Leaders**	**Corporate Leaders' Home Zip Codes**	**Total Emissions in the Home Zip Codes (000)**	**Average Emissions for Facilities Zip Codes (000)**
Average			32	7,438
Dupont	Woolard, Edgar[1]	19807	0	2,966
American Cyanamid	Sella, George[1]	07470	41	6,372
Monsanto	Mahoney, Richard[1]	63124	0	4,046
Freeport McMoRan	Moffett, James[1]	70002	0	14,561
Kennecott Corp.	Jocklick, G. Frank[1]	84092	0	96,553
Renco Group	Rennert, Ira[2]	10021	0	47,525
Asarco	Osborne, Richard[1]	10038	0	8,097
3M	Jacobson, Allen[1]	55127	57	961
GMC	Stempel, Robert[1]	48013	0	674
BP Chemicals	Chase, Rodney Frank[5]	N/A	N/A	4,158
Vulcan	Sklenar, Herbert[1]	35223	0	19,848
Eastman Kodak	Whitmore, Kay[1]	14534	0	5,242
Inland Steel	Luerrson, Frank[1]	46321	1	13,359
Occidental Petroleum	Irani, Ray[1]	90077	0	1,089
Phelps Dodge	Yearley, Douglas[1]	85258	0	2,652
Courtaulds Fibers	Fullcylove, Brian[2]	36695	0	45,971
Amoco	Fuller, H. Richard[1]	60601	0	1,191
BASF	Bernthal, Frederick W.[4]	07950	0	678
Hoechst Celanese Corp.	Drew, Earnest[1]	07931	0	1,220
Arcadian Corp.	Comeaux, R. James[1]	38119	0	2,442

Toxic Releases By Zipcode for Chief Executives and Their Facilities

Company	Corporate Leaders	Corporate Leaders' Home Zip Codes	Total Emissions in the Home Zip Codes (000)	Average Emissions for Facilities Zip Codes (000)
Sterling Chemicals	Waggoner, J. Virgil[1]	77019	14	32,662
Elf Atochem	Preston, Seymour[2]	19380	39	5,148
General Electric	Welch, John[1]	06830	0	250
ICI American Holdings	Bernard Lochtenberg[3]	19317	0	672
Ford	Poling, Harold[1]	48302	0	589
Stone Container	Stone, Roger W.[1]	60022	0	2,095
Allied-Signal	Hennessy, Edward[1]	07960	30	402
USX	Corry, Charles[1]	15241	0	2,709
International Paper	Georges, John A.[1]	06840	0	384
Union Carbide	Kennedy, Robert D.[1]	06840	0	383
Air Products and Chemicals	Baker, Dexter[1]	18103	480	656
Hercules	Hollingsworth, David S.[1]	19806	0	665
Westvaco	Luke, John A.[1]	N/A	N/A	1,176
Unocal	Stegemeier, Richard[1]	92631	376	1,364
Chevron	Derr, Kenneth T.[1]	94563	0	706
Georgia-Pacific	Hahn, T. Marshall[1]	30305	0	254
Cyprus Minerals	Barr, Kenneth J.[1]	80237	0	2,274
Shell Oil	Richardson, Frank H.[1]	77024	274	718
Wheeling-Pittsburgh	Wareham, James[1]	15317	9	1,882
Eli Lilly	Wood, Richard O.[1]	46200	0	1,559

Toxic Releases By Zipcode for Chief Executives and Their Facilities

Company	Corporate Leaders	Corporate Leaders' Home Zip Codes	Total Emissions in the Home Zip Codes (000)	Average Emissions for Facilities Zip Codes (000)
Copper Range	Wood, Russell W.[2]	N/A	N/A	18,421
Dow Chemical	Popoff, Frank[1]	48640	0	671
Simpson Investment	Moseley, Furman[2]	98112	0	2,553
Farmland Industries	Rainey, James[1]	73034	0	934
Reynolds Metals	Bourke, William O.[1]	23220	10	464
Cabot	Bodman, Samuel W.[1]	02130	0	1,525
Procter & Gamble	Smale, John G.[1]	45208	0	375
Great Lakes Chemical	Kampen, Emerson[1]	47906	185	1,485
National Steel	Doerr, Ronald[2]	15237	0	4,050
Upjohn	Cooper, Theodore[1]	49008	0	5,307

[1]Chief Executive Officer
[2]President
[3]Chairman
[4]Vice-Chairman
[5]Executive Vice President
NA - Not Available
Sources: Who's Who in Finance and Industry, Wealth Holders of America, Telephone Directory Service, County and city assessment offices, State Departments of Motor Vehicles, and the Federal Election Commission

Chemical Toxicity

Manufacturing facilities are required to report releases into the environment of 322 chemicals. In order to define the dangers posed to human health by the release of these chemicals, this report categorizes the chemicals by their known or suspected effects based on the EPA's Office of Toxic Substances health effects matrix.

- *Carcinogen* -- Chemicals indicated as causing cancer meet one or more of the following criteria: (1) classification as human positive or suspected carcinogen or animal positive or suspected carcinogen by the International Agency for Research on Cancer; (2) classification as human carcinogen, or possible or probable carcinogen by EPA; or (3) genetox evaluation showing tumor induction or an indication of tumor induction, from the GENETOX on-line data base. Exposure to any amount of carcinogen poses a health risk.

- *Heritable Mutagen* -- Chemicals that cause gene mutations that can be inherited by off-spring are considered heritable mutagens. Classification is based on reports of positive results from studies on heritable mutation events in germ cells as reported in the GENOTEX on-line data base, fall in this category. When this report uses the term, "Birth Defect-Causing Chemicals," chemicals in this category are included.

- *Developmental Toxin* -- Chemicals are classified as exhibiting developmental toxicity if studies indicate that the chemical may damage the developing embryo (embryotoxicity) or fetus (fetotoxicity), or tends to cause developmental deformities (teratogenicity). When this report uses the term, "Birth Defect-Causing Chemicals," chemicals in this category are included along with heritable mutagens.

- *Reproductive Toxin* -- Chemicals are indicated as exhibiting reproductive toxicity if data supports that the chemical has adverse effects on male or female reproductive performance.

- *Acute Toxin* -- Chemicals are indicated as acutely toxic if data show that short term exposure by the inhalation, oral, or dermal route can cause death according to the Registry of Toxic Effects of Chemical Substances. The following criteria were used: (1) median lethal concentration is less than or equal to 5 mg/L; (2) median lethal dose (oral) is less than or equal to 250 mg/kg; and (3) median lethal dose (dermal) is less than or equal to 500 mg/kg.

- *Chronic Toxin* – Chemicals are indicated as exhibiting chronic toxicity if adverse effects other than cancer occur at doses less than or equal to 1 g/kg/day following exposure (inhalation, oral or dermal) for more than 90 days, as reported in the Hazardous Substances Databank.

- *Neurotoxin* – Chemicals are indicated as neurotoxic if chronic (at least 90 days) exposure (inhalation, oral, dermal) to doses less than or equal to 1 g/kg/day results in adverse effects on the structure or function of the central and/or peripheral nervous system as reported in the Hazardous Substances Databank.

Many chemicals are categorized by toxicity in Appendix II of this report.

The Effects of Toxic Chemical Releases: Two Case Studies

These toxicological categories are not mere abstractions. These chemicals when released into the environment may have substantial impact on the health of communities. The following two case studies highlight these effects:

The British Petroleum chemical manufacturing plant in Lima, Ohio, is the largest single source of toxic chemical releases in the northeastern United States in 1990, based on its TRI submission.

The facility, which manufactures a variety of chemical products,dumped over 78 thousand pounds of toxics into the Ottawa River, injected over 20 million pounds underground, released 3.6 million pounds into the air, and sent 80 thousand off site for disposal. Of greatest concern are chemicals that can cause cancer or birth defects, including acetonitrile (birth defects), acrylonitrile (cancer and birth defects), and formaldehyde (cancer).

After conducting a series of investigations on disease in Lima, the Ohio Department of Health concluded in a November 23, 1990 letter, that:

> We did find several types of cancer and COPD [chronic obstructive pulmonary disease] to be high in Lima when compared to Ohio. We feel very strongly that the emissions form the BP facility do pose a health risk to the local population. However, what is difficult is to quantitate [sic] this risk. We have explicitly stated that all reasonable steps should be taken to minimize or eliminate these emissions.

Despite the results of the Health Department's studies, BP continues to claim that it is not harming the health of local residents.

Ashland Oil's refinery in Catlettsburg, Kentucky, produces a variety of petroleum products including gasoline and heating oil. In 1990 it reported releasing over 628 thousand pounds of toxics into the air and 64 thousand pounds into the water. Of those releases, thirteen chemicals accounting for over 412 thousand pounds are carcinogens or are suspected of causing birth defects.

A study conducted in 1990 by epidemiologists at the University of Pittsburgh for EPA found that residents of Canova, West Virginia, who live immediately downwind of Ashland Oil, had significantly higher rates of respiratory illnesses and headaches that did residents of a nearby town who were not exposed to Ashland's air emissions.

Organization of the Data

The remainder of the report is organized into six sections. The first provides information about the total releases of toxic chemicals in Georgia. The second section provides information about releases of known or suspected carcinogens. The third section provides information about the release of chemicals known to cause, or suspected of causing birth defects. The fourth section provides information about toxic air pollution. The fifth section provides information about toxic water pollution. The first page of these sections provides background information about each topic. The second page details the leading companies, facilities, counties, zip codes, industries and chemicals, and presents a map indicating the location of the releases. The sixth section provides information about the toxic releases of each manufacturing industry.

There are ten appendices. The first appendix provides detailed information about the Citizen's Fund survey of facilities reporting the greatest reductions of toxic releases. The next two cover chemical toxicity and are described above. Appendix IV details releases for all counties by environmental destination: air, water, land, underground, public sewer systems and off-site waste sites. Appendix V details releases for each county by toxicity: carcinogens, developmental toxins (birth defects), heritable mutagens, reproductive toxins, neurotoxins, acute toxins and chronic toxins. Appendix VI details releases for all zip codes by environmental destination. Appendix VII details releases for each zip code by toxicity. Appendix VIII provides the total for each facility that reported in the state. Appendix IX breaks down each facility's releases by toxicity. Appendix X breaks down each facility's releases by their environmental destination.

Each facility meeting the law's criteria must submit a toxic chemical release report. (In some cases, facilities submit reports for portions of an entire facility.) As used in this report, "company" means the parent company of one or more reporting facilities. In many instances, facilities did not disclose their parent company, or disclosed as parents companies those that were themselves subsidiaries of larger companies. A number of steps were taken to ascertain the parent companies of those facilities including matching on Dun and Bradstreet numbers, EPA identification numbers and common sense (for example, facilities named General Motors that did not disclose a parent were included in the General Motors total).

The Three Methods of Categorizing Toxic Releases

By Point of Release	By Type of Toxicity	By type of Industry
Air	Cancer causing	Major type of manufacturer such as chemical, leather, steel, etc.
Water	Birth Defect	
Land	Heritable Mutagen	
Underground	Developmental Toxin	
Public Sewage	Acute Toxin	
Off-Site Transfer	Chronic Toxin	
	Neurotoxin	

Total Releases of Toxic Chemicals

In 1990, Georgia's manufacturing companies reported releasing 101.5 million pounds of toxic chemicals. The ten companies that released the most toxic chemicals accounted for 45.6 million pounds, or 45 percent of all reported toxic chemical releases in the state. These chemicals were released to air, water and land, injected underground, discharged to public sewage treatment plants and sent off-site to treatment, storage and disposal operations.

The leading counties were Chatham, Richmond, and Glynn. Appendix III details releases for all counties by environmental destination. The leading zip codes were 31401 (Savannah), 30120 (Cartersville), 31206 (Macon), 31521 (Brunswick), and 30903 (Augusta).

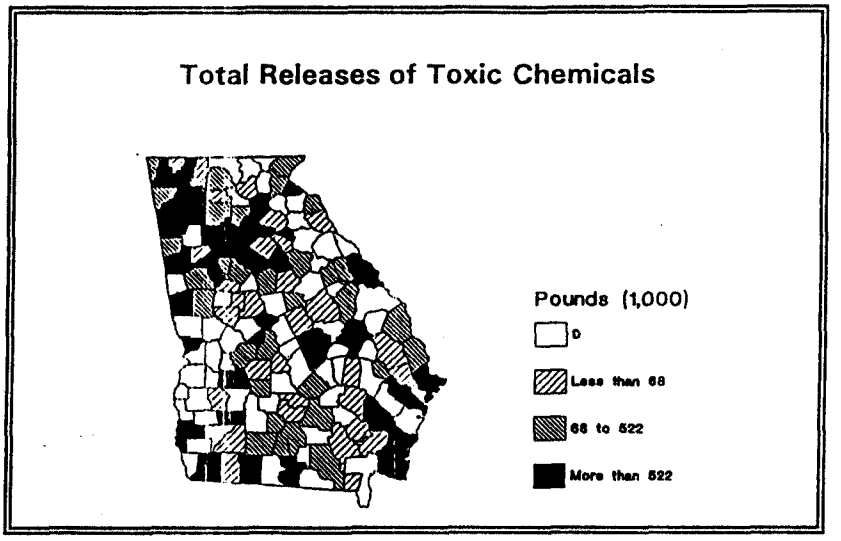
Toxic Pollution Facts

Total pounds (1990): 101.5 million
Percent top ten companies: 45%
Leading industries:

- o Paper
- o Chemicals
- o Transportation

Leading chemicals:

- o Methanol
- o Acetone
- o Ammonia



Companies

Company	Releases
1. Union Camp Corp.	11,425,762
2. Georgia-Pacific Corp.	8,250,121
3. Chemical Products Corp.	5,729,500
4. OVS America Inc.	5,316,000
5. Arcadian Corp.	3,107,990
6. Temple-Inland Inc.	2,563,523
7. Gilman Paper Co.	2,549,927
8. Hercules Inc.	2,342,765
9. N. V. Dsm	2,261,893
10. Merck & Co. Inc.	2,029,105

Facilities

Facility	Releases
1. Union Camp Corp. (Savannah)	10,723,794
2. Chemical Products Corp. (Cartersville)	5,729,500
3. Macon Kraft Inc.	5,316,000
4. Georgia Pacific Corp... (Brunswick)	4,820,090
5. Great Southern Paper (Cedar Springs)	2,855,210
6. Gilman Paper Co. (Saint Marys)	2,549,927
7. Inland-Rome Inc.	2,477,475
8. Hercules Brunswick Plant	2,267,829
9. DSM Chemicals North.. (Augusta)	2,261,893
10. Merck & Co. Inc. Flint.. (Albany)	2,029,105

Counties

County	Releases
1. Chatham	15,807,459
2. Richmond	8,781,097
3. Glynn	7,175,563
4. Bibb	6,185,565
5. Bartow	6,111,324
6. Fulton	5,495,367
7. Whitfield	3,213,542
8. Floyd	3,159,229
9. Early	2,884,970
10. Camden	2,771,422

Zip Codes

Zip Code/City	Releases
1. 31401 (Savannah)	10,922,532
2. 30120 (Cartersville)	6,080,284
3. 31206 (Macon)	5,595,143
4. 31521 (Brunswick)	4,836,178
5. 30903 (Augusta)	4,221,093
6. 31732 (Cedar Springs)	2,884,970
7. 30161 (Rome)	2,828,766
8. 31407 (Port Wentworth)	2,560,493
9. 31558 (Saint Marys)	2,549,927
10. 31520 (Brunswick)	2,339,385

Sources: Environmental Protection Agency, Citizens Fund

Cancer-Causing Chemicals

The release of cancer-causing chemicals into the environment is of particular concern because most scientists agree that unlike other chemicals, exposure to any amount of a carcinogen creates some health risk.

Manufacturing companies in Georgia reported releasing 12.2 million pounds of chemicals known to cause or suspected of causing cancer. The top ten companies accounted for 7.4 million pounds, or 61 percent of the total. The known and suspected carcinogens which were released in the greatest quantity were dichloromethane, chloroform, and trichloroethylene.

Warning:
Hazards of the Most Frequently Released Carcinogens*

DICHLOROMETHANE -- Methylene Chloride -- also called dichloromethane -- can affect you when breathed and by passing through skin. Methylene Chloride should be handled as a CARCINOGEN WITH EXTREME CAUTION. Exposure to high concentrations causes unconsciousness and even death. Lower exposures can cause headaches, fatigue, unsteadiness and "drunk" behavior. Exposure can irritate the lungs, causing a buildup of fluid (pulmonary edema), a medical emergency. Long term exposure may damage the liver and brain.

CHLOROFORM -- Chloroform can affect you when breathed in and by passing through your skin. Chloroform is a CARCINOGEN and may be a teratogen HANDLE WITH EXTREME CAUTION. Exposure can cause you to become dizzy, lightheaded, nauseated, confused, and to have a headache. It can cause the heart to beat irregularly or stop. Higher levels can cause coma and death. Repeated exposure can damage the liver, kidneys and nervous system. Exposure can irritate and contact can damage the eye.

TRICHLOROETHYLENE -- Trichloroethylene can affect you when breathed in. It should be handled as a CARCINOGEN WITH EXTREME CAUTION. Exposure can cause you to feel dizzy and to pass out. Exposure can cause an irregular heart beat leading to sudden death. High levels may cause brain damage and death. Repeated exposure can cause fatigue, memory loss, headache, irrita bility, mental confusion, and depression. It can damage the liver and kidneys. High exposures can irritate the lungs. Prolonged contact can burn the skin.

* Known or suspected carcinogen
Source: New Jersey Department of Health; Hazardous Substance Fact Sheet; Rapid Guide to Hazardous Chemicals in the Workplace.

Cancer Facts

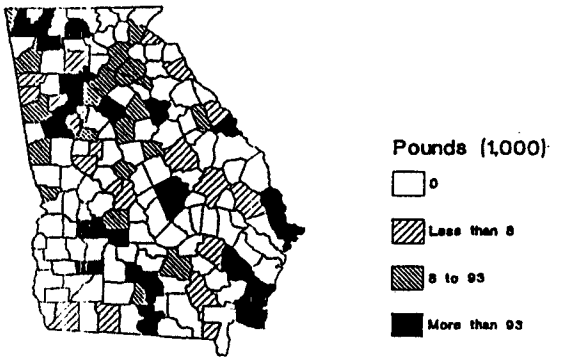
Total pounds (1990): 12.2 million
Percent top ten companies: 61%
Leading industries:

- o Chemicals
- o Paper
- o Plastics

Leading chemicals:

- o Dichloromethane
- o Chloroform
- o Trichloroethylene

Total Releases of Carcinogens



Companies

Company	Releases
1. Merck & Co. Inc.	1,550,455
2. Georgia-Pacific Corp.	950,979
3. Forstmann & Co. Inc.	901,203
4. Lockheed Corp.	865,464
5. Dow Chemical Co.	780,965
6. N. V. Dsm	766,722
7. ITT Corp.	433,561
8. Hickory Springs Mfg. Co.	412,737
9. Goodyear Tire & Rubber Co.	390,355
10. Federal Paper Board Co. Inc.	360,400

Facilities

Facility	Releases
1. Merck & Co. Inc. Flint.. (Albany)	1,550,455
2. Forstmann & Co. Inc. Dublin Nathaniel..	901,203
3. Lockheed Aeronautical.. (Marietta)	865,464
4. Georgia Pacific Corp... (Brunswick)	854,800
5. Dow Chemical Dalton Site	780,965
6. DSM Chemicals North.. (Augusta)	766,722
7. ITT Rayonier Inc. Jesup Pulp Div.	433,561
8. Hickory Springs Mfg. Co. (Americus)	412,737
9. Goodyear Tire & Rubber.. (Calhoun)	390,342
10. Federal Paper Board Co. Inc. Augusta..	360,400

Counties

County	Releases
1. Dougherty	1,550,455
2. Richmond	1,238,072
3. Cobb	929,737
4. Glynn	921,756
5. Laurens	901,203
6. Fulton	820,361
7. Whitfield	806,230
8. Sumter	621,116
9. Camden	556,362
10. Wayne	433,561

Zip Codes

Zip Code/City	Releases
1. 31708 (Albany)	1,550,455
2. 31021 (East Dublin)	901,203
3. 30063 (Marietta)	865,464
4. 31521 (Brunswick)	854,800
5. 30721 (Dalton)	784,820
6. 30903 (Augusta)	768,742
7. 31709 (Americus)	621,116
8. 31545 (Jesup)	433,561
9. 30701 (Calhoun)	390,342
10. 30913 (Augusta)	360,400

Sources: Environmental Protection Agency, Citizens Fund

Birth Defects

The companies listed below released the largest amount of chemicals that could cause birth defects in the state of Georgia. These chemicals are categorized as either developmental toxins or heritable mutagens, in the U.S. EPA's Office of Toxic Substances health effects matrix.

Manufacturing facilities in Georgia reported releasing 27.9 million pounds of chemicals that are known to or suspected of causing birth defects. The top ten companies accounted for 11.1 million pounds, or 40 percent of the total. The toxic chemicals known to cause, or suspected of causing birth defects released in the greatest amounts were toluene, xylene (mixed isomers), and 1,1,1-trichloroethane.

Warning:
Hazards of the Most Frequently Released Chemicals Linked to Birth Defects*

TOLUENE – Toluene can affect you when breathed in and by passing through your skin. Toluene may cause mutations. Handle with extreme caution. It may damage the developing fetus. Toluene is a FLAMMABLE LIQUID and a FIRE HAZARD. Exposure can irritate the nose, throat, and eyes. Higher levels can cause you to feel dizzy, lightheaded, and to pass out. Death can occur. Repeated exposures can damage bone marrow causing low blood cell count. It can also damage the liver and kidneys. Toluene can cause slowed reflexes, trouble concentrating, and headaches. Prolonged contact can cause a skin rash.

XYLENE (MIXED ISOMERS) – Xylenes can affect you when breathed in and by passing through your skin. Xylenes may damage the developing fetus. They can irritate the eyes, nose and throat. High levels can cause dizziness, passing out and death. Repeated exposure may damage bone marrow causing low blood cell count. They may also damage the eyes, and cause stomach problems. Xylenes may cause problems with memory and concentration. Xylenes are FLAMMABLE LIQUIDS and FIRE HAZARDS. The effects of particular xylene compounds may vary.

1,1,1-TRICHLOROETHANE – Methyl Chloroform – also called 1,1,1-trichloroethane – can affect you when breathed in and by passing through your skin. It may cause mutations. Handle with extreme caution. Exposure can cause you to feel dizzy and lightheaded. Higher levels can cause unconsciousness, irregular heartbeat and death. Contact can irritate the skin and eyes. Prolonged contact can cause thickening and cracking of the skin.

* Known to cause, or suspected of causing, birth defects.
Source: New Jersey Department of Health; Hazardous Substance Fact Sheet; Rapid Guide to Hazardous Chemicals in the Workplace.

Birth Defects Facts

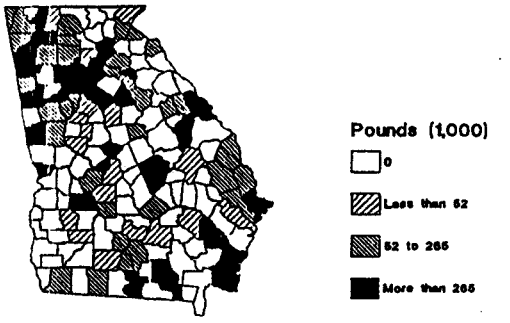
Total pounds (1990): 27.9 million
Percent top ten companies: 40%
Leading industries:

- o Transportation
- o Chemicals
- o Plastics

Leading chemicals:

- o Toluene
- o Xylene (mixed Isomers)
- o 1,1,1-Trichloroethane

Releases of Toxic Chemicals Known to Cause or Suspected of Causing Birth Defects



Companies

Company	Releases
1. Ringier America Inc.	1,457,159
2. N. V. Dsm	1,366,445
3. Georgia-Pacific Corp.	1,195,782
4. Lockheed Corp.	1,195,539
5. General Motors	1,078,948
6. Union Camp Corp.	1,071,534
7. Textron Corp.	1,057,001
8. Forstmann & Co. Inc.	930,316
9. Wellington Leisure Products Inc.	921,000
10. Dow Chemical Co.	855,370

Facilities

Facility	Releases
1. Ringier America Inc. (Evans)	1,457,159
2. DSM Chemicals North.. (Augusta)	1,366,445
3. Lockheed Aeronautical.. (Marietta)	1,195,539
4. Forstmann & Co. Inc. Dublin Nathaniel..	930,316
5. Wellington Leisure.. (Madison)	921,000
6. Davidson Exterior Trim.. (Americus)	913,901
7. Georgia Pacific Corp... (Brunswick)	875,460
8. Dow Chemical Dalton Site	855,370
9. Union Camp Corp. (Valdosta)	659,499
10. GM C-P-C Doraville	637,098

Counties

County	Releases
1. Fulton	2,311,967
2. Richmond	2,145,681
3. Cobb	1,549,349
4. Columbia	1,489,617
5. Glynn	1,317,435
6. Laurens	1,290,008
7. Sumter	1,057,316
8. Whitfield	1,042,104
9. Morgan	924,170
10. Hall	911,677

Zip Codes

Zip Code/City	Releases
1. 30809 (Evans)	1,489,617
2. 30903 (Augusta)	1,374,235
3. 30063 (Marietta)	1,195,539
4. 31709 (Americus)	1,057,316
5. 31021 (East Dublin)	930,316
6. 30650 (Madison)	924,170
7. 31521 (Brunswick)	889,260
8. 30721 (Dalton)	860,392
9. 31601 (Valdosta)	790,490
10. 30360 (Atlanta)	637,098

Sources: Environmental Protection Agency, Citizens Fund

Toxic Air Releases

Air pollution is the principal source of human exposure to toxic substances. While people drink two liters of water per day, they breathe 15,000 to 20,000 liters of air per day. It is also a prime source of environmental contamination. Under the Clean Air Act, standards have been set for only seven hazardous air pollutants; meanwhile, hundreds of other toxic pollutants are ***legally*** dumped into the air with no control requirements whatsoever. (EPA's standards for airborne particulates may provide some incidental controls on discharges of toxic metals, and the ozone standards may limit some toxic organic pollutants.)

In 1990, manufacturing facilities in Georgia reported releasing 72.5 million pounds of toxic chemicals to the air. The ten companies that released the most toxic chemicals into the air accounted for 35.5 million pounds, or 49 percent of all reported toxic air emissions. The toxic chemicals released into the air in the greatest quantities were methanol, acetone, and hydrochloric acid.

Warning:
Hazards of the Most Frequently Released Chemicals to the Air

METHANOL -- Methyl Alcohol -- also called methanol -- can affect you when breathed in and by passing through your skin. Exposure can cause blindness. It may damage the liver. Exposure to high concentrations can cause headaches, nausea, vomiting and dizziness. It can cause death. Repeated or prolonged contact can cause dryness and cracking of the skin. Methyl Alcohol is a FLAMMABLE LIQUID and a FIRE HAZARD.

ACETONE -- Acetone can affect you when breathed in and by passing through your skin. Exposure to high concentrations can cause you to become dizzy, lightheaded, and to pass out. Contact can irritate the skin. Repeated exposure may cause dryness. Contact can cause severe skin burns. Exposure can irritate the eyes, nose, and throat. Acetone is a FLAMMABLE LIQUID and a FIRE HAZARD.

HYDROCHLORIC ACID -- Hydrogen Chloride -- better known as hydrochloric acid -- can affect you when breathed in. Breathing the vapor can irritate the lungs, and cause bronchitis. Higher exposures can cause a build up of fluid in the lungs (pulmonary edema), a medical emergency. Continued contact with dilute solutions may cause a skin rash or irritation. Hydrogen Chloride is a CORROSIVE CHEMICAL and contact can cause eye damage that could lead to blindness. It can also cause severe skin burns. Exposure can irritate the mouth, nose, and throat. Long term exposure may cause erosion of the teeth.

Source: New Jersey Department of Health; Hazardous Substance Fact Sheet; Rapid Guide to Hazardous Chemicals in the Workplace.

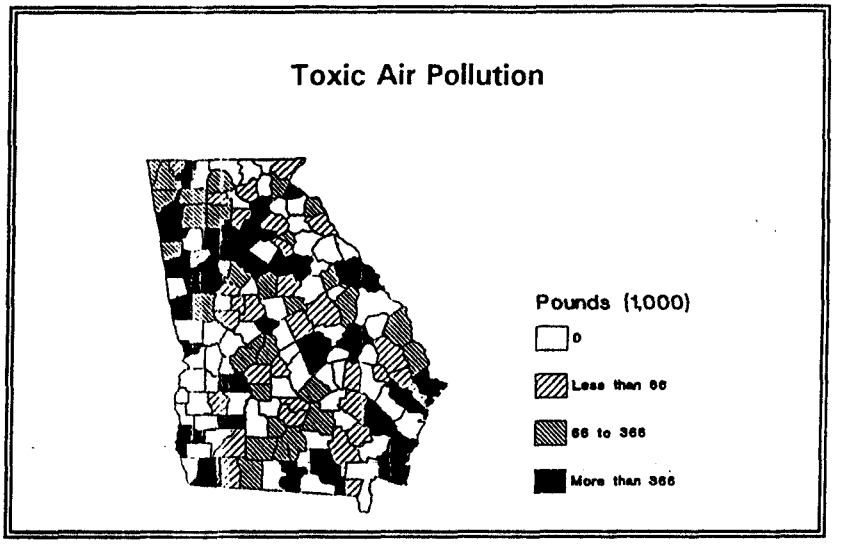
Air Pollution Facts

Total pounds (1990): 72.5 million
Percent top ten companies: 49%
Leading industries:

- o Paper
- o Chemicals
- o Transportation

Leading chemicals:

- o Methanol
- o Acetone
- o Hydrochloric Acid



Companies

Company	Releases
1. Union Camp Corp.	10,502,202
2. Georgia-Pacific Corp.	7,796,930
3. OVS America Inc.	3,049,000
4. Temple-Inland Inc.	2,556,081
5. Gilman Paper Co.	2,493,795
6. Hercules Inc.	2,170,110
7. N. V. Dsm	1,930,188
8. Federal Paper Board Co. Inc.	1,861,265
9. Merck & Co. Inc.	1,672,505
10. Ringier America Inc.	1,443,589

Facilities

Facility	Releases
1. Union Camp Corp. (Savannah)	10,444,891
2. Georgia Pacific Corp... (Brunswick)	4,687,540
3. Macon Kraft Inc.	3,049,000
4. Great Southern Paper (Cedar Springs)	2,720,750
5. Gilman Paper Co. (Saint Marys)	2,493,795
6. Inland-Rome Inc.	2,470,205
7. Hercules Brunswick Plant	2,097,707
8. DSM Chemicals North.. (Augusta)	1,930,188
9. Federal Paper Board Co. Inc. Augusta..	1,861,265
10. Merck & Co. Inc. Flint.. (Albany)	1,672,505

Counties

County	Releases
1. Chatham	13,435,437
2. Glynn	6,871,032
3. Richmond	5,428,094
4. Fulton	3,862,402
5. Bibb	3,484,183
6. Floyd	3,031,680
7. Early	2,721,750
8. Camden	2,707,099
9. Sumter	1,879,024
10. Dougherty	1,691,632

Zip Codes

Zip Code/City	Releases
1. 31401 (Savannah)	10,546,466
2. 31521 (Brunswick)	4,703,628
3. 31206 (Macon)	3,323,148
4. 30903 (Augusta)	2,959,668
5. 30161 (Rome)	2,722,048
6. 31732 (Cedar Springs)	2,721,750
7. 31558 (Saint Marys)	2,493,795
8. 31520 (Brunswick)	2,167,404
9. 30913 (Augusta)	1,894,587
10. 31709 (Americus)	1,879,024

Sources: Environmental Protection Agency, Citizens Fund

Toxic Water Discharges

While more standards and monitoring requirements exist for toxic surface water discharges than for toxic air emissions, standards have not been issued for all of the TRI chemicals. Even if a facility discharges a chemical for which a standard does exist, the federal or state regulatory agency may not have incorporated that standard into the facility's discharge permit.

Most public drinking water treatment systems are designed to remove conventional pollutants, not toxic chemicals. Drinking water standards have not been established for many of the chemicals covered by the TRI program, although a regulatory process is in place for a large number of the chemicals most commonly found in drinking water supplies.

In 1990, manufacturing companies in Georgia reported releasing 4.3 million pounds into surface water. The top ten companies accounted for 3.8 million pounds, or 89 percent of total water discharges. The toxic chemicals discharged to water in the greatest quantities were ammonium nitrate (solution), ammonia, and ammonium sulfate (solution).

Warning:
Hazards of the Most Frequently Released Chemicals to the Water

AMMONIUM NITRATE (SOLUTION) -- Ammonium Nitrate can affect you when breathed in and by passing through your skin. Exposure may irritate the skin, eyes, nose, throat and lungs. Overexposure can cause nausea and vomiting, headaches, weakness, faintness and collapse. Severe overexposure may lower the ability of the blood to carry oxygen. This can result in a bluish color to skin and lips, headaches, dizziness, collapse and even death. Ammonium Nitrate is a HIGHLY REACTIVE CHEMICAL and is a DANGEROUS EXPLOSION HAZARD.

AMMONIA -- Ammonia can affect you when breathed in. Breathing Ammonia may irritate the lungs, causing coughing and/or shortness of breath. Higher exposures can cause a buildup of fluid in the lungs (pulmonary edema), which can cause death. Ammonia is a CORROSIVE CHEMICAL and can severely burn the eyes, leading to permanent damage. Contact with Ammonia liquid can severely burn the skin. Long term exposure to Ammonia can cause chronic irritation of the eyes, nose, mouth, and throat.

AMMONIUM SULFATE (SOLUTION) -- Ammonium sulfate is used in making fertilizers and in water treatment. Exposure can cause discomfort and irritation to skin but not permanent injury. There is little evidence of harm to humans. It is toxic to some aquatic life.

Source: New Jersey Department of Health; Hazardous Substance Fact Sheet; Rapid Guide to Hazardous Chemicals in the Workplace.

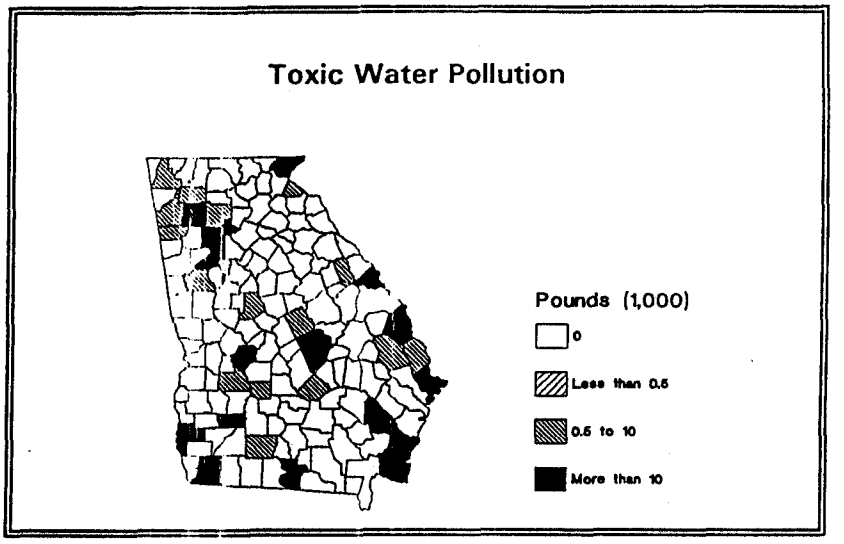
Water Pollution Facts

Total pounds (1990): 4.3 million
Percent top ten companies: 89%
Leading industries:

- o Chemicals
- o Paper
- o Textiles

Leading chemicals:

- o Ammonium Nitrate (solution)
- o Ammonia
- o Ammonium Sulfate (solution)



Companies

Company	Releases
1. Arcadian Corp.	2,074,100
2. N. V. Dsm	331,702
3. UOP	236,746
4. Union Camp Corp.	214,963
5. Engelhard Corp.	205,135
6. Merck & Co. Inc.	192,750
7. Mohawk Commercial Carpet	160,832
8. Pca/ekco-Kaiser	154,750
9. Georgia-Pacific Corp.	131,928
10. Fulton County Board Of Commissioners	99,000

Facilities

Facility	Releases
1. Arcadian Corp. Savannah.. (Port Wentworth)	1,178,000
2. Arcadian Corp. Augusta Plant	896,100
3. DSM Chemicals North.. (Augusta)	331,702
4. Katalistiks International (Savannah)	236,746
5. Union Camp Corp. (Savannah)	214,963
6. Engelhard Corp. (Attapulgus)	201,289
7. Merck & Co. Inc. Flint.. (Albany)	192,750
8. Mohawk Commercial Carpet (East Dublin)	160,832
9. Packaging Corp. Of.. (Clyattville)	154,750
10. Georgia Pacific Corp... (Brunswick)	118,700

Counties

County	Releases
1. Chatham	1,709,437
2. Richmond	1,275,097
3. Dougherty	215,030
4. Decatur	202,904
5. Laurens	197,110
6. Lowndes	154,750
7. Glynn	118,963
8. Fulton	99,474
9. Macon	62,660
10. Rabun	57,470

Zip Codes

Zip Code/City	Releases
1. 30903 (Augusta)	1,227,802
2. 31407 (Port Wentworth)	1,194,350
3. 31404 (Savannah)	236,996
4. 31708 (Albany)	215,030
5. 31401 (Savannah)	214,963
6. 31715 (Attapulgus)	201,289
7. 31021 (East Dublin)	162,838
8. 31601 (Valdosta)	154,750
9. 31521 (Brunswick)	118,700
10. 30349 (College Park)	99,000

Sources: Environmental Protection Agency, Citizens Fund

Groundwater Toxics in Georgia

In 1990, manufacturing facilities in the state released 1.1 million pounds of toxic chemicals onto the land and injected 810 pounds into deep wells. As the following analysis indicates, it is possible that such releases could eventually contaminate groundwater in the area. While some states have improved their regulations restricting such releases, it is clear that only a comprehensive program of toxic use reduction can successfully prevent dangerous toxic chemicals from threatening local drinking water supplies.

Solid Waste Landfills.

An Environmental Protection Agency (EPA) study identified 89% of the dug wells and 22% of the drilled wells in one rural Georgia county as polluted due to faulty well construction and/or contamination from the county landfill sited in a layer of soluble dolomite. Contamination is likely in other areas of the state, especially where geologic conditions are similar. As the EPA admits, even the new federally-required landfill liners are not leakproof and will eventually release contaminants into the groundwater. Since landfills accept hazardous waste from small-quantity generators as well as household hazardous waste, it is reasonable to expect that they will continue to leak and contaminate groundwater. Toxic use reduction at the source is the only certain way to protect the state's groundwater from toxic pollution. Hazardous waste sites are not the only sources of groundwater pollution in Georgia.

Pesticide and Fertilizer Contamination

In the predominantly agricultural Southeast portion of Georgia, non-point runoff in recharge areas has resulted in several cases of documented pesticide and fertilizer contamination. For example, the pesticide EDB was found in a four-mile wide area of a shallow aquifer despite the fact that the pesticide was banned in 1983. Agricultural sources of contamination are the only groundwater threat not regulated by the Georgia Environmental Protection Department (EPD).

Industrial Septic Systems

The disposal of industrial waste through industrial septic systems is a growing problem in Georgia. Because state laws do not consider these septic tanks to be underground injection wells, they are not subject to regulation by the Georgia EPD. All that industrial facilities have to do is build septic tanks for their hazardous wastes to avoid regulation. (Technically, there are no Class V injection wells in

Georgia according to the EPD.) Because this method of waste disposal is inconsistent with federal standards, the improvement of underground industrial waste regulation is a critical issue in Georgia.

Underground Storage Tanks

Spills and leaks from underground storage tanks holding hazardous materials have resulted in groundwater contamination throughout the state. Examples include a wood treating facility in Augusta, a heating and air conditioning manufacturing company in Milledgeville, and the Dow latex products plant in Dalton.

Recent legislation to regulate underground storage tanks, the Georgia Underground Storage Tank (GUST) program contains adequate measures for EPD monitoring of GUST's. The legislature also allocated money from the general fund to be set aside in a GUST trust fund, but insufficient interest income has so far prevented any serious implementation of the remedial provisions contained in the law. EPD is reluctant to use capital from the fund for storage tank cleanup. Environmental groups are proposing a special tax on gasoline at the distributor level which should solve the clean-up dilemma.

Some examples of polluters that are or may be contaminating groundwater:

Pioneer PVC **Plant,** Greensboro. At this factory, a consultant was hired by new plant owners to catalog environmental threats and company liabilities. After following up on an employee tip that untreated contaminants had been flushed regularly into the septic system, the consultant documented high levels of trichloroethylene in the groundwater. The consultant, fired by the company, later exposed the problem and the site is now being investigated for possible federal action.

ConAgra Poultry Breeding Plant, Dalton. Drain fields from underground disposal of waste water have been contaminated with nitrates and arsenic used in feed for chickens at this site. Aerial photographs show a definite effect in the immediate area, and horses on an adjacent farm have experienced a disproportionate number of miscarriages.

Microflow, Sparks. This plant produces pesticides, and disposes of its waste in industrial septic tanks.

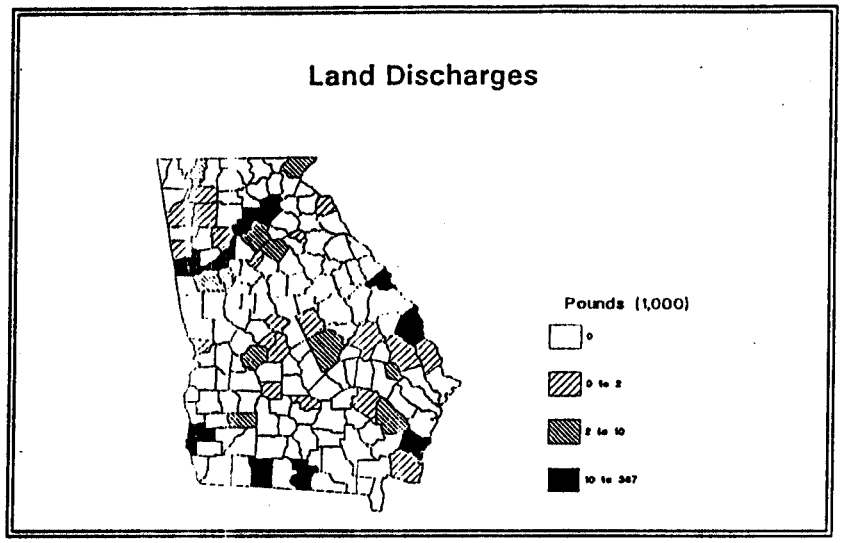
Land Discharge Facts

Total pounds (1990): 1.1 million
Percent top ten companies: 93%
Leading industries:

- o Chemicals
- o Food
- o Paper

Leading chemicals:

- o Ammonia
- o Chromium Compounds
- o Zinc Compounds



Companies

Company	Releases
1. Kemira Oy	364,450
2. American Proteins Inc.	317,991
3. Georgia-Pacific Corp.	129,850
4. Continental Grain Co.	50,293
5. Textron Corp.	38,400
6. Pca/ekco-Kaiser	29,705
7. Glidden Co.	22,434
8. Federal Paper Board Co. Inc.	15,940
9. Spartan Mills	13,100
10. Burlington Holdings	6,600

Facilities

Facility	Releases
1. Kemira Inc. (Savannah)	364,450
2. Georgia Proteins Inc. (Cumming)	317,991
3. Great Southern Paper (Cedar Springs)	116,000
4. Dutch Quality House (Oakwood)	50,293
5. Compressor Components.. (Thomasville)	38,400
6. Packaging Corp. Of.. (Clyattville)	29,705
7. Glidden Co. (Atlanta)	19,684
8. Federal Paper Board Co. Inc. Augusta..	15,940
9. Georgia Pacific Corp... (Brunswick)	13,850
10. King Finishing Co. (Dover)	13,100

Counties

County	Releases
1. Chatham	367,219
2. Forsyth	317,991
3. Early	116,000
4. Hall	53,578
5. Thomas	38,400
6. Lowndes	29,705
7. Fulton	20,522
8. Richmond	15,962
9. Glynn	14,696
10. Screven	13,100

Zip Codes

Zip Code/City	Releases
1. 31402 (Savannah)	364,450
2. 30130 (Cumming)	317,991
3. 31732 (Cedar Springs)	116,000
4. 30566 (Oakwood)	53,048
5. 31792 (Thomasville)	38,400
6. 31601 (Valdosta)	29,705
7. 30318 (Atlanta)	19,934
8. 30913 (Augusta)	15,940
9. 31521 (Brunswick)	13,850
10. 30424 (Dover)	13,100

Sources: Environmental Protection Agency, Citizens Fund

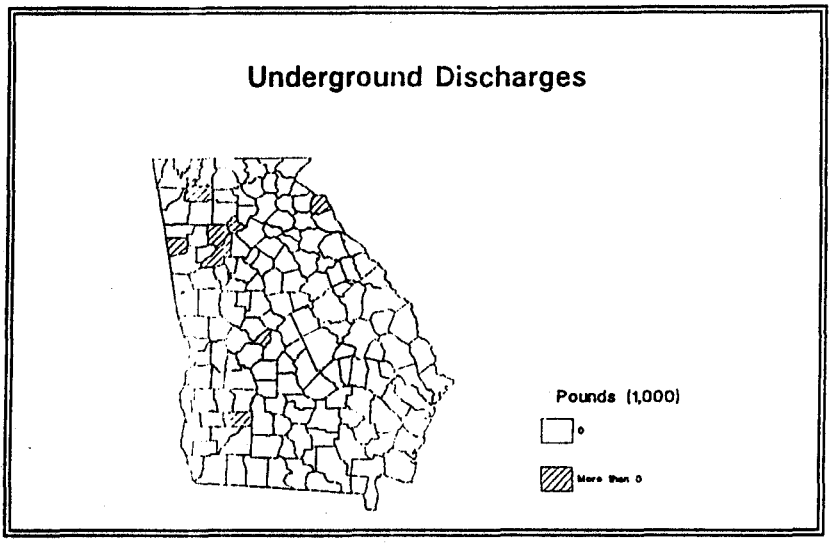
Underground Discharge Facts

Total pounds (1990): 810
Percent top ten companies: 100%
Leading industries:

- o Food
- o Textiles
- o Chemicals

Leading chemicals:

- o Copper
- o Manganese
- o Zinc (fume Or Dust)



Companies

Company	Releases
1. Cagles Inc.	750
2. Apollo Industries Inc.	10
3. Mearl Corp.	10
4. Multitex Corp.	10
5. S&S Co. Of Georgia Inc.	10
6. Empire Chemical Inc.	5
7. Foam Products Corp.	5
8. Kor-Chem. Inc.	5
9. Olivetti Supplies Inc.	5

Facilities

Facility	Releases
1. Cagles Farms Inc. (Dalton)	750
2. Apollo Industries Inc. (Smyrna)	10
3. Mearl Corp. Sfm Div. (Hartwell)	10
4. Color Masters (Multi-Tex) (Calhoun)	10
5. S&S Co. Of Georgia Inc. (Albany)	10
6. Hoover-Hanes Rubber (Tallapoosa)	5
7. Kor-Chem. Inc. (Atlanta)	5
8. Foam Products Corp. (Calhoun)	5
9. Olivetti Supplies Inc. Fort Valley Ga..	5

Counties

County	Releases
1. Whitfield	750
2. Gordon	15
3. Cobb	10
4. Dougherty	10
5. Hart	10
6. Fulton	5
7. Haralson	5
8. Peach	5

Zip Codes

Zip Code/City	Releases
1. 30722 (Dalton)	750
2. 30701 (Calhoun)	15
3. 30082 (Smyrna)	10
4. 30643 (Hartwell)	10
5. 31701 (Albany)	10
6. 30176 (Tallapoosa)	5
7. 30336 (Atlanta)	5
8. 31030 (Fort Valley)	5

Sources: Environmental Protection Agency, Citizens Fund

Toxic Chemical Releases by Industry

Releases by Industry

Companies in Standard Industrial Classification (SIC) codes 20-39 were required to file TRI forms if they produced or used the stipulated amount of chemicals. The paper industry released the largest amount of toxic chemicals, accounting for 25 percent of the total. Toxic chemical releases of Georgia manufacturers by SIC code are listed below:

Total Releases of Toxic Chemicals
By Manufacturing Industry, 1990

Industry	Cancer Releases	Birth Defects	Air Releases	Water Releases	Total Releases
Paper	2,123,074	2,587,433	22,574,281	501,757	25,597,559
Chemicals	3,231,775	3,816,234	10,447,412	3,128,418	23,941,125
Transportation	651,275	4,360,021	5,247,549	250	6,937,391
Plastics	1,466,883	2,823,108	5,055,391	261	5,478,653
Textiles	31,342	464,313	1,743,748	249,195	5,467,250
Stone/Clay	1,134,573	1,648,676	2,184,739	20,821	3,239,257
Fabricated Metals	19,183	1,108,047	2,303,557	1,750	2,935,661
Printing	0	1,970,939	2,090,104	0	2,288,625
Machinery	200,235	1,193,367	1,863,499	13	2,170,760
Primary Metals	84,200	628,278	706,075	1,608	1,634,123
Furniture	0	990,569	1,579,778	0	1,580,538
Electrical	216,660	1,134,814	1,302,653	1,510	1,554,826
Food	9,063	9,439	542,967	37,393	1,308,875
Lumber	256,064	282,153	576,772	260	704,818
Misc. Manufacturing	91,293	304,812	229,106	255	650,997
Instruments	281,724	285,833	358,318	0	427,665
Petroleum	79,688	113,213	97,786	3,615	151,706
Apparel	6,603	14,500	20,353	0	21,103
Tobacco	0	0	0	0	0

Source: Environmental Protection Agency, Citizens Fund calculations.

Recommendations

Reduce the Use and Releases of Toxic Chemicals

Manufacturers should commit to meeting ambitious goals to reduce their releases of all toxic chemicals, not just those chemicals covered by the TRI. Regardless of corporate commitments, however, we cannot rely exclusively on the goodwill of some individual companies to reduce their waste as a solution to the nation's toxic pollution problem. To insure that all businesses reduce toxics, the federal government should follow the lead of many states and establish programs to require businesses to reduce the use and release of toxic chemicals and to assist them in doing so.

Pollution control measures including installation of incinerators, scrubbers, and all post-production pollution trapping devices do not reduce the production of toxic waste. There is only one way to prevent toxic pollution from being released into the environment or from being shifted from one environmental medium to another, and that is to eliminate or reduce waste generation at the source.

The voluntary measures advocated by the U.S. EPA and the chemical industry have proved themselves inadequate. Only 734 of the 5,747 companies that released any of 17 chemicals included under the E.P.A.'s 33/50 voluntary waste reduction program agreed to participate. This response rate of less than 13 percent highlights the weakness of this approach.

Expand the Right-to-Know

The federal government should dramatically increase the number of chemicals covered by the TRI program and require any facilities using or releasing those chemicals to file reports. According to a United States General Accounting Office report released in June of 1991, "the inventory would be more useful if it were more comprehensive."[19]

U.S. EPA has the authority to expand coverage of the TRI to include additional chemicals and facilities, yet the Agency has chosen to focus more of its energies on deleting chemicals from the list. By increasing the number of chemicals covered under the program and triggering reporting requirements on the use or release of chemicals rather than a facility's function, the TRI would give the public a much better picture of potential health and environmental hazards. Currently, only manufacturing facilities are required to report their toxic releases. Federal facilities, wastewater treatment plants, incinerators and mining operations should all be added to the list. Over 500 additional chemicals currently not covered

[19] U.S. General Accounting Office, EPA's Toxic Release Inventory Is Useful but Can Be Improved, June 1991.

under the Toxic Release Inventory but that have been implicated in causing birth defects, cancer, or other chronic health effects should be added immediately to the TRI list.

Enforce and Strengthen TRI Reporting Requirements

According to EPA, one in three facilities required to file toxics release reports failed to do so.[20] Such a poor compliance rate demands stepped-up enforcement efforts by EPA and the states.

In addition to improving the compliance rate, EPA should increase its efforts to audit facilities to determine the accuracy of their TRI submissions. The reporting requirements give industries significant flexibility in determining their releases, essentially allowing them to use any method they consider justifiable to estimate their releases; it is important for the public to know that industries' reports are accurate.

Reporting requirements should be expanded to include information on the quantity of toxic chemicals used, incorporated in products, and generated as nonproduct output for each production unit at a plant. This requirement would help industry and the public to compare the efficiency of different facilities in the same industry and identify those that could be improved. In addition, reporting should include the quantity of toxic products transported to and from the facility as well as the amount of toxic products being stored at the facility.

[20] U.S. EPA, *1989 Toxics Release Inventory Figures Show Downward Trend*, May 16, 1991.

Profile of a Toxic Polluter

ATLANTIC STEEL CO.
384 Old Grassdale Rd.
Cartersville, GA 30120 (Bartow Co.)

Parent Company: IVACO

Releases By Destination (Pounds)

	Air	Water	Land	Under-ground	Public Sewage	Offsite Transfer	Total	
Chromium	32	0	0	0	0	0	32	C
Ethylene Glycol	0	0	0	0	0	33,233	33,233	
Lead	936	0	0	0	0	0	936	B
Manganese	1,872	0	0	0	0	0	1,872	
Zinc Compounds	19,640	0	0	0	0	0	19,640	

Note: A "C" on the right margin designates that this chemical is a known or suspected carcinogen. A "D" indicates that the chemical is known to cause or suspected of causing birth defects.

Descriptions of Selected Chemicals Released by ATLANTIC STEEL CO.

CHROMIUM - Chromium can affect you when breathed in. Chromium is a CARCINOGEN HANDLE WITH EXTREME CAUTION. Chromium metal ore has been reported to cause lung allergy. Chromium fumes can cause "metal fume fever," a flu like illness lasting about 24 hours with chills, aches, cough and fever. Chromium particles can irritate the eyes.

ETHYLENE GLYCOL - Ethylene Glycol can affect you when breathed in and by passing through your skin. Absorption by the body is higher if Ethylene Glycol is heated or sprayed. Ethylene Glycol should be handled as a TERATOGEN WITH EXTREME CAUTION. Exposure can cause a "drunk" feeling, nausea, vomiting, and headache. Higher exposures can cause kidney damage and death. Exposure can cause kidney and liver damage even without other symptoms. Ethylene Glycol can cause an allergic skin rash.

LEAD - Lead can affect you when breathed in and if swallowed from food, drinks, or cigarettes. Lead is a TERATOGEN HANDLE WITH EXTREME CAUTION. Repeated exposure causes Lead buildup in the body. Low levels may cause tiredness, mood changes, headaches, stomach problems and trouble sleeping. Higher levels may cause aching, weakness, and concentration or memory problems. Lead can also cause serious permanent kidney or brain damage at high levels. Lead exposure increases risk of high blood pressure. The effects of particular compounds containing lead may vary.

MANGANESE - Manganese can affect you when breathed in. Repeated exposure can cause permanent brain damage. Early symptoms include poor appetite, weakness and sleepiness. Later effects include changes in speech, balance and personality. The later symptoms are identical to Parkinsons Disease. Heated Manganese can release fumes causing a flu like illness with chills, fever and aching. Chest congestion resembling pneumonia can also occur. Exposure may also cause a lung allergy. It may damage the kidneys and liver. The effects of particular manganese compounds may vary.

Source: New Jersey Dept. of Health, Hazardous Substance Fact Sheets; Sax and Lewis, Rapid Guide to Hazardous Chemicals in the Workplace (Van Nostrand, 1986).

Offsite Transfers

Destination	Chemical	Amount (Pounds)
Bartow County Landfill (Cartersville, GA)	ethylene glycol	33,233

Appendix I: Survey Results
Facilities Showing the Greatest Reductions

Facility Name	Location	Amount of Reduction (in pounds)	Explanation
Monsanto	Alvin, TX	141,709,476	Delisting of ammonium sulfate
Atochem North America Inc. Racon Facility (Elf Aquitaine)	Wichita, KS	53,802,691	Had a contract with Vulcan to dispose of its waste in Vulcan's deep well; in 1989, both companies reported the waste but, in 1990, Elf decided not to
DuPont Beaumont Works	Beaumont, TX	50,358,174	Delisting of ammonium sulfate
BASF	Geismar, LA	38,417,626	HCL is a byproduct which is normally sold. In 1989, market was down and BASF was forced to inject waste into deep well. In 1990, BASF sold it and did not have report it as waste
Columbian Chemicals Co.	St. Louis, MO	36,151,420	Delisting of ammonium sulfate
Vulcan Chemicals	Wichita, KS	33,154,686	Used more HCL internally to make another product; installed a process to purify the HCL
BP Chemicals Green Lake	Port Lavaca, TX	32,882,136	Delisting of ammonium sulfate
BP Chemicals	Lima, OH	32,369,160	Delisting of ammonium sulfate
American Cyanamid Co. Fortier Plant	Westwego, LA	30,309,986	Delisting of ammonium sulfate
Allied Signal Hopewell Plant	Hopewell, VA	27,756,573	Delisting of ammonium sulfate
Magnesium Corp. of America Rowley Plant	Tooele, UT	24,010,814	Installed new incinerators and scrubbers in July of 1990.
National Steel Midwest Steel Division	Portage, IN	22,860,530	Ended use of sulfuric acid in pickling line, replacing it with the more effective HCL
Filtrol Corp.	Vernon, CA	19,696,230	Delisting of ammonium sulfate
Triad Chemical	Donaldsonville, LA	14,374,148	Modified production process and changed operation/maintenance procedures in ammonia production
3M	Cordova, IL	13,270,281	Delisting of ammonium sulfate; acetone and xylene sent to be recycled not counted in 1990 numbers
The Upjohn Co. Production Facility	Kalamazoo, MI	11,185,612	Sent out to reuse facility in 1989, not reported in 1990