

CABINET CONFIDENTIAL

toxic products in the home





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National Environmental Trust, Washington, D.C.

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Executive Summary



The past 10 years have seen major changes in what were thought to be truisms about toxic chemicals and human health—that there was a clear dose level below which health effects would not occur and that the U.S. population as a whole had been exposed to few toxic chemicals. Scientists are now finding that toxic chemicals impact health at much lower levels than previously believed. Research has also documented widespread exposure to various chemicals through measuring the levels in human blood, urine, and tissue. These changes have come from improvements in measurement techniques enabling researchers to detect extremely low concentrations of chemicals, often several orders of magnitude lower than just a few years ago.

Exposure is more widespread than previously thought, and some chemicals induce health effects at extremely low dose levels. These concerns have led to an emerging consensus that the incidence of chronic ailments and developmental disabilities is connected in some way to toxic chemical exposures. The incidence of some illnesses potentially linked to chemical exposure is increasing. How does exposure to toxic chemicals occur? We know that as a result of regulation and public disclosure, emissions of toxic chemicals to the environment—at least those emissions we track—are declining, so people's potential exposure from those sources should be declining as well.

Previous analyses of data from New Jersey and Massachusetts, the two states that track quantities of toxic chemicals, show that amounts shipped as or in products are much greater than the amounts of chemicals released to the environment. This is not surprising, since several industries in those states are in the business of producing toxic chemicals.

Much of that “product,” however, also becomes raw material for other facilities that manufacture products likely to be used in the home. *Cabinet Confidential* examines amounts of chemicals shipped in products from those facilities and focuses on specific chemicals that are known or suspected neurotoxins, carcinogens, or reproductive or developmental toxins. Certainly, most consumers would expect that products in their homes will contain minimal amounts of these particular chemicals. While New Jersey and Massachusetts may not be representative of the U.S. as a whole, the results show that environmental releases of these types of chemicals are small compared to the tens of millions of pounds of these chemicals shipped in products from facilities in those states. Among the findings:

- On average, for every pound of neurotoxins, carcinogens, or reproductive or developmental toxins facilities in New Jersey and Massachusetts report as released to the air, water, or land, they ship 42 pounds of the same chemicals as or in products that could be used in or around the home.
- The top 10 chemicals shipped as or in products examined for this report are all neurotoxins. In addition, one of the 10, toluene, is a developmental toxin, and lead compounds and creosote are carcinogens.
- The top five chemicals shipped as or in products that are likely to be inhaled by users are chlorine, toluene, xylene, methyl ethyl ketone, and n-hexane.
- The five industry categories that shipped the most neurotoxins, carcinogens, or reproductive or developmental toxins in products are paints, varnishes, and enamels; specialty cleaning products; motor vehicle and passenger car bodies; adhesives and sealants; and wood preservatives. These five industrial classifications account for more than 85 percent of the amount of the chemicals examined in this report.

- While most of the amount of chemicals shipped as or in products was intended to be part of the product, a substantial portion was not, such as raw material impurities, solvents, or unreacted chemicals. Together, these represent millions of pounds of toxic chemicals “along for the ride,” serving no particular purpose in the product.

Cabinet Confidential calls on policymakers to consider a number of reforms to address the problem of toxics in products:

- Congress should require nationwide reporting of chemicals in products as is currently required in Massachusetts and New Jersey. As in those two states, the tracking can be combined with programs that have explicit goals for reducing the use of toxic chemicals.
- Virtually all of the chemicals examined in this report were “grandfathered” under the Toxic Substances Control Act of 1976 (TSCA), meaning that they are exempt from even the rudimentary requirements of the Act. Since 1976, Congress has broken new ground in reducing pesticide exposures through the Food Quality Protection Act, and the European Union is considering a wide-ranging program that will dramatically change its regulation of toxic chemicals. Congress should apply lessons from these policies and revise TSCA. Specifically, TSCA should require industry to identify the potential health effects of exposure to chemicals that are used in products and accelerate the introduction of less toxic or non-toxic alternatives.
- In the meantime, the other federal agencies with some jurisdiction over products—primarily the Food and Drug Administration and the Consumer Product Safety Commission—should reform the way they deal with issues of chemical exposure to reflect recent science on low-level exposures and a precautionary ethic.
- To help gauge the extent of potential exposure, the Centers for Disease Control should expand its bio-monitoring program to include chemicals found in products used in and around the home. Only one of the 10 chemicals most likely to be found in household products is currently on the CDC’s bio-monitoring list.

Introduction



The last 10 years have seen an explosion of science exploring the links between toxic chemicals and human health. The science tends to reinforce some major themes: (1) health effects are often seen at very low levels of exposure—several orders of magnitude lower than previously thought; (2) human exposure to many industrial chemicals is widespread; and (3) increased incidence of various chronic diseases may be linked to toxic exposures.

The landmark environmental laws of the 1970s have succeeded in reducing the toxic pollution of the air, land, and water that is a byproduct of manufacturing. These laws have largely failed, however, to deal with the use of chemicals in the products themselves. *Cabinet Confidential* shines a light on the chemicals that are put in manufactured products and suggests ways that national policies can be updated to address this source of exposure.

Emerging Consensus: People Are More Vulnerable to Toxic Chemicals

Peer-reviewed studies in scientific journals such as *Environmental Health Perspectives* continuously find that common chemicals impact health at lower levels than previously believed. Chemicals as ubiquitous as lead,¹ cadmium,² bisphenyl-A,³ and phthalates⁴ have all been found to cause profound health effects at very low levels in recent years. In the case of lead, researchers could only discover the lower level effects after bans on lead in paint and gasoline succeeded in reducing the levels in a majority of children.

There has also been increased attention to the fact that in the real world—as opposed to the laboratory—people are exposed to multiple chemicals at the same time. Some chemicals have similar mechanisms of toxicity and therefore their effect on the body is additive. (Two small doses of each may be the same thing to the body as getting a larger dose of one.) Combinations of other chemicals are believed to be synergistic—producing different effects together than they would separately.

In the early '90s, a panel of the National Academy of Sciences (NAS) declared that children were more vulnerable to toxic chemicals than adults and that policies governing pesticide exposures failed to protect them.⁵ Congress reacted to the panel's findings and incorporated them into the Food Quality Protection Act of 1996. The FQPA reformed the way EPA sets the allowable amounts of pesticide residues left on food to reflect children's special vulnerability and cumulative exposure. Though the NAS report focused specifically on pesticides, the same principles apply to other chemical uses. Yet the NAS report has not prompted a similar reform in the area of industrial and commercial chemicals.

Toxic Chemicals and Chronic Diseases

Various chronic diseases have increased in incidence during the last two decades, prompting some experts and policy makers to call for more comprehensive tracking of diseases and environmental exposures to toxic chemicals. According to the Trust for America's Health:

- The number of people with asthma increased 75% between 1980 and 1994. Among children under four, the disease has exploded by 160%. Today, asthma attacks are the number one cause of school absenteeism.
- Endocrine and metabolic chronic diseases like diabetes increased 20% between 1986 and 1995.
- The number of low birth weight and premature babies has been rising since 1980, and birth defects are the number one killer of infants in America today.
- Neurological diseases such as multiple sclerosis increased 20% between 1986 and 1995.
- Brain cancers and other tumors in children's nervous systems rose by more than 25% between 1973 and 1996.
- Leukemia, the most common childhood cancer, increased more than 15% over the past 20 years.⁶

The federal government currently monitors a cross-section of the population for exposure to toxic chemicals, but has yet to link that information with information tracking various diseases. In February 2003, the Centers for Disease Control (CDC) documented that a broad sample of Americans carry over 100 chemicals in their blood and urine.⁷ The chemicals include those deliberately added to products, like phthalates, as well as some that are in the

environment as a by-product of combustion, like dioxin. Studies by other governments and private entities have similarly documented widespread human exposure to common industrial chemicals all over the world. Senator Hillary Clinton (D-NY) and Representative Nancy Pelosi (D-CA) have called for a national program to coordinate and improve disease tracking and match it with the CDC data on chemical exposures.

Even without a national system to track environmental exposures and diseases, scientists already attribute environmental exposure to chemicals to disease incidence. A June 2000 NAS panel estimated that 25% of developmental and neurological deficits in children were due to the interplay between these chemicals and genetic factors and that 3% were caused by exposure to the chemicals alone.⁸ Recent studies have confirmed earlier research demonstrating a link between home pesticide use and leukemia rates in children.⁹ An exhaustive study of twins published in the *New England Journal of Medicine* in 2000 concluded that environmental factors—including toxic chemicals—play the principal role in causing cancer compared with heredity.¹⁰

Examining Chemicals in Products

Against the backdrop of scientific concern about the links between exposure to toxic chemicals and human health effects, it is odd that chemicals in products have received relatively little scrutiny. This is due, in part, to the fact that the main law governing chemicals (besides pesticides) in products—the Toxic Substances Control Act (TSCA)—has proved to be a paper tiger when compared to environmental laws such as the Clean Air Act and Clean Water Act. There is no approval process for chemicals in products that is comparable to the one the FDA oversees for drugs. Using data from New Jersey and Massachusetts, *Cabinet Confidential* suggests that this oversight responsibility is significant, because the amount of chemicals going into consumer products dwarfs the amount that is released as waste into the air, land, and water. In addition, the data show that millions of pounds of chemicals are shipped in products that appear to have no function in the products—amounts that otherwise would not be accounted for in environmental reporting.

Results and Discussion



Data reported under programs for New Jersey and Massachusetts between 1995 and 2000 show that more than one billion pounds of over 100 chemicals known or suspected to be neurotoxins, carcinogens, or reproductive or developmental toxins were included in products shipped from certain manufacturing facilities in those states. These facilities in 53 different industrial classifications produce products that are likely found in the home, although some products from individual facilities may also be intended for industrial or manufacturing purposes. Table 1 lists the top 25 such chemicals shipped by these industries for 1995-2000. Table 2 lists the top industrial classifications by amounts of chemicals shipped as or in products, and Table 3 lists the top industry/chemical combinations. A full version of each of the tables appears in Appendix I. Appendix II contains the methodology and assumptions used in developing this report.

In reviewing these data, it is important to keep the following limitations and qualifications in mind:

- The presence of chemicals in products potentially found in the home does not necessarily mean that people are directly exposed to all, or even some, of these chemicals during use of particular products. This report does not attempt to estimate exposure levels or risk.
- Having said that, however, this report does make a distinction between volatile chemicals—those more likely to vaporize—because they could potentially be inhaled, and non-volatile chemicals, for which exposure would occur through ingestion (oral exposure) or through the skin (dermal exposure). Obviously, people using these products can take precautions

to minimize inhalation exposure, but this is generally more difficult than avoiding swallowing or touching the products. In addition, inhalation is often a more significant exposure route than oral or dermal exposure.

- Because this report examines industrial classifications and not specific products made at individual facilities, it is not possible to say that an individual product will contain a given toxic chemical. For example, although the paints, varnishes, lacquers, enamels, and allied products industry (SIC code 2851) as a group reported shipping toluene as or in products, it does not mean that every product from each facility in SIC code 2851 contains toluene.
- Although this report contains data submitted by industrial classifications selected for producing products likely to be found in and around the home, facilities do not report the amount of chemicals shipped in products actually intended for home use. There are no data available to determine exactly how much of the amount of chemicals shipped in products actually end up in products intended for home use.
- The data used in this report were those collected by New Jersey and Massachusetts, and they are subject to the rules of those reporting programs. The programs do not include every chemical that could be classified as a neurotoxin, carcinogen, or reproductive or developmental toxin that may be shipped in products intended for use in the home. Facilities reporting the data used in this report are not required to measure the amounts of these chemicals shipped as or in products, but only to provide good-faith estimates from available data.

Finally, while these results only apply to facilities in New Jersey and Massachusetts making it impossible to extrapolate for the U.S. as a whole, there is no reason to assume these two states have higher concentrations of toxic chemicals in products than the other 48. In fact, New Jersey and Massachusetts are the only ones to establish specific programs to reduce the use of toxic chemicals by industry.

The Consumer Product Safety Commission and Vinyl Toys

Soft toys made from polyvinylchloride (PVC) plastic contain di-isononyl phthalate (DINP), a chemical that makes hard plastic more pliable and that is known to damage the liver and kidneys. When children put soft PVC toys in their mouths, they swallow DINP that leaches from the plastic.

In November 1998, the National Environmental Trust and 11 other environmental and public health organizations petitioned the Consumer Product Safety Commission (CPSC) to remove DINP from all toys intended for children up to age five. They also asked for a national health advisory on these products. After extensive press coverage, CPSC and U.S. toy manufacturers voluntarily agreed in December 1998 to remove DINP from toys intended for the mouth while CPSC studied potential risk to children from soft PVC toys.

CPSC completed its review in 2002 and found that DINP is more toxic than previously thought. A CPSC advisory panel lowered the maximum amount of DINP that could be consumed without potential health effects by 20 percent, despite chemical industry requests to raise the level." With this new acceptable daily intake and measurements of the amount of DINP that leaches from PVC, CPSC concluded that children could mouth soft PVC toys safely up to 75 minutes a day. CPSC then commissioned a study to observe children's mouthing behavior, and determined that children spend less than 75 minutes a day mouthing soft PVC toys. This led CPSC to conclude that DINP in PVC toys posed no health risk to children. While the mouthing study was large and seemingly comprehensive, it failed to account for the fact that soft PVC toys were much less available at the time it was conducted due to the manufacturers' voluntary agreement with CPSC to remove PVC toys from the market. With fewer of these products available, children would necessarily spend less time with them in their mouths than before the ban. Relying on this flawed logic, CPSC decided that soft PVC toys were safe, and declined to make the ban mandatory—a move that would have encompassed imports and "down-market" retail outlets. The refusal to formally ban DINP from vinyl toys removes the leverage that convinced domestic toy makers to agree to the voluntary withdrawal in the first place. In fact, soft vinyl toys may be more available in the future.

In contrast, the European Union (EU) issued an emergency ban on soft PVC teething toys on December 1, 1999, and its decision has been reaffirmed repeatedly since. Japan issued a similar ban in 2002 on DINP in toys that might be mouthed by children under six. Once again, the CPSC was unmoved by the science that prompted action by our major trading partners to protect public health, nor were the various findings translated into public health protection in the United States.

TABLE 1**Top 25 Known or Suspected Neurotoxins, Carcinogens, or Reproductive or Developmental Toxins Shipped As or in Products Likely Found in the Home, 1995-2000**

Rank	Chemical	Number of Facilities Reporting the Chemical	Amount of the Chemical Shipped As or in Product (pounds)	Percent of Total Shipped As or in Product	Percent of Total Shipped in Product Not Intended to Be in Product	Releases of Chemical per Pound of Intended Use in Product
1	Chlorine	11	207,151,360	19.50	0.0	1 / 38,000
2	Lead compounds	25	150,661,278	14.18	0.0	1 / 40,000
3	Toluene	160	129,203,585	12.16	1.2	1 / 18
4	Xylene (mixed isomers)	98	78,453,460	7.39	1.0	1 / 85
5	Glycol ethers	100	73,125,317	6.88	0.6	1 / 40
6	Ethylene glycol	36	48,539,935	4.57	9.2	1 / 2,500
7	Creosote	1	46,585,535	4.39	0.0	1 / 4,900
8	Methyl ethyl ketone	113	44,772,785	4.21	3.8	1 / 15
9	n-Hexane	26	32,730,852	3.08	0.7	1 / 30
10	Methanol	77	21,938,673	2.07	4.1	1 / 12
11	1,1-Dichloro-1-fluoroethane (HCFC-141b)	6	16,779,390	1.58	4.4	1 / 42
12	Dichloromethane	36	14,311,797	1.35	0.6	1 / 11
13	Methyl isobutyl ketone	65	12,787,886	1.20	1.2	1 / 13
14	Cresol (mixed isomers)	3	12,264,839	1.15	0.0	1 / 3,400
15	Di(2-ethylhexyl) phthalate	18	11,255,981	1.06	0.0	1 / 2,900
16	Dibutyl phthalate	17	10,007,413	0.94	0.0	1 / 12,000
17	Methyl methacrylate	14	9,637,337	0.91	10.1	1 / 95
18	Ethylbenzene	29	9,440,257	0.89	5.6	1 / 84
19	Ammonia	61	8,825,612	0.83	2.8	1 / 10
20	Dichlorodifluoromethane (CFC-12)	5	8,348,297	0.79	0.0	1 / 48
21	1,2,4-Trimethylbenzene	27	7,926,658	0.75	1.6	1 / 180
22	Sodium phosphate, tribasic	6	7,275,650	0.68	0.0	1 / 98,000
23	Methyl tert-butyl ether	5	7,177,334	0.68	0.0	1 / 790
24	Nickel compounds	8	7,078,892	0.67	0.3	1 / 4,800
25	Ethyl acetate	32	5,970,218	0.56	0.0	1 / 2.8
Total for all records		466	1,062,264,637	100.00	1.8	1 / 42

Top Chemicals

The top 10 chemicals shipped as or in products examined for this report are all neurotoxins. In addition, toluene is a developmental toxin, and lead compounds and creosote are carcinogens. (See Table 1. Appendix I, Table 1 lists the particular known or suspected health effects for each of the chemicals.)

The top five chemicals shipped as or in products that are likely to be inhaled by users of these products are chlorine, toluene, xylene, methyl ethyl ketone, and n-hexane. Together, they account for nearly half of the amount of chemicals shipped in products analyzed by this report.

TABLE 2**Top 25 Industries by Amounts of Known or Suspected Neurotoxins, Carcinogens, or Reproductive or Developmental Toxins Shipped As or in Products Likely Found in the Home, 1995-2000**

Rank	Primary SIC Code	Industry Classification	Number of Facilities Reporting Chemicals of Interest	Amount Shipped As or in Product (pounds)	Percent of Total Shipped As or in Product	Percent of Total Shipped in Product Not Intended to Be in Product	Releases of Chemicals per Pound of Intended Use in Product
1	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	64	266,003,016	25.04	2.0	1 / 230
2	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	17	259,478,985	24.43	0.0	1 / 5,600
3	3711	Motor Vehicles And Passenger Car Bodies	3	182,848,676	17.21	2.3	1 / 330
4	2891	Adhesives And Sealants	36	147,696,824	13.90	1.0	1 / 120
5	2491	Wood Preservatives	5	50,524,985	4.76	0.0	1 / 5,300
6	2841	Soap And Other Detergents, Except Specialty Cleaners	14	28,268,535	2.66	0.0	1 / 2,300
7	3089	Plastics Products, NEC	23	23,142,164	2.18	3.6	1 / 21
8	3069	Fabricated Rubber Products, NEC	18	19,863,659	1.87	3.5	1 / 7.4
9	2834	Pharmaceutical Preparations	23	14,208,961	1.34	1.7	1 / 16
10	2893	Printing Ink	15	11,954,489	1.13	0.0	1 / 130
11	2844	Perfumes, Cosmetics, And Other Toilet Preparations	13	11,567,696	1.09	0.0	1 / 200
12	3086	Plastics Foam Products	14	8,319,520	0.78	0.0	1 / 14
13	2833	Medicinal Chemicals And Botanical Products	13	6,508,898	0.61	10.0	1 / 12
14	3996	Linoleum, Asphalted-felt-base, And Other Hard Surface Floor	3	5,821,246	0.55	0.1	1 / 150
15	2295	Coated Fabrics, Not Rubberized	17	3,581,117	0.34	47.4	1.6 / 1
16	2672	Coated And Laminated Paper, NEC	21	3,282,387	0.31	15.9	1.1 / 1
17	3411	Metal Cans	5	2,696,039	0.25	0.0	1 / 2.3
18	3944	Games, Toys, And Children's Vehicles, Except Dolls And Bicycles	1	2,385,425	0.22	0.0	1 / 160
19	2493	Reconstituted Wood Products	1	2,189,664	0.21	34.0	1 / 72
20	2269	Finishers Of Textiles, NEC	11	1,920,510	0.18	92.3	5.9 / 1
21	3021	Rubber And Plastics Footwear	1	1,803,643	0.17	0.0	Zero
22	2679	Converted Paper And Paperboard Products, NEC	9	902,283	0.08	13.2	1 / 1.2
23	2087	Flavoring Extracts And Flavoring Syrups, NEC	6	818,866	0.08	8.2	1 / 39
24	3949	Sporting And Athletic Goods, NEC	5	693,212	0.07	0.0	1.4 / 1
25	3088	Plastics Plumbing Fixtures	2	687,175	0.06	0.0	1 / 9.3
Total for all records			466	1,062,264,637	100.00	1.8	1 / 42

Top Industrial Classifications

The five industries that shipped the most neurotoxins, carcinogens, or reproductive or developmental toxins in products are paints, varnishes, and enamels (SIC 2851); specialty cleaning products (2842); motor vehicle and passenger car bodies (3711); adhesives and sealants (2891); and wood preservatives (2491). (See Table 2.) These five industrial classifications account for more than 85 percent of the amounts of the chemicals examined in this report that were shipped as or in products.

TABLE 3
Top 25 Industry/Chemical Combinations by Amounts of Known or Suspected Neurotoxins, Carcinogens, or Reproductive or Developmental Toxins Shipped As or in Products Likely Found in the Home, 1995-2000

Rank	SIC Code	Industry	Chemical	Amount of the Chemical Shipped As or in Product (pounds)	Percent of Total Shipped in Product Not Intended to Be in Product	Releases of Chemical per Pound of Intended Use in Product
1	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Chlorine	207,118,000	0	Zero
2	3711	Motor Vehicles And Passenger Car Bodies	Lead compounds	126,199,317	0	Zero
3	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Xylene (mixed isomers)	65,515,051	0.99	1 / 320
4	2891	Adhesives And Sealants	Toluene	58,044,213	0	1 / 340
5	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Toluene	54,837,908	0	1 / 160
6	2491	Wood Preservatives	Creosote	46,585,535	0	1 / 4,900
7	2891	Adhesives And Sealants	n-Hexane	30,766,665	0	1 / 300
8	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Glycol ethers	30,655,568	0	1 / 6,200
9	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Glycol ethers	26,845,953	0.11	1 / 290
10	3711	Motor Vehicles And Passenger Car Bodies	Ethylene glycol	23,465,057	12.42	Zero
11	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Ethylene glycol	20,545,349	0	1 / 9,300
12	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Methyl ethyl ketone	19,886,702	1.26	1 / 110
13	2891	Adhesives And Sealants	Methyl ethyl ketone	19,044,027	0	1 / 85
14	3069	Fabricated Rubber Products, NEC	Lead compounds	17,601,129	0	1 / 840,000
15	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Methyl isobutyl ketone	12,054,501	1.09	1 / 340
16	2841	Soap And Other Detergents, Except Specialty Cleaners	Cresol (mixed isomers)	12,023,900	0	1 / 3,400
17	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Methanol	11,103,556	0.14	1 / 310
18	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Dichloromethane	10,745,460	0	1 / 230
19	3711	Motor Vehicles And Passenger Car Bodies	Toluene	9,412,868	2.39	1 / 1,700
20	2834	Pharmaceutical Preparations	Dichlorodifluoromethane (CFC-12)	8,348,297	0	1 / 48
21	2891	Adhesives And Sealants	Methyl methacrylate	8,253,035	0	1 / 96
22	3089	Plastics Products, NEC	1,1-Dichloro-1-fluoroethane (HCFC-141b)	7,635,941	0	1 / 39
23	2841	Soap And Other Detergents, Except Specialty Cleaners	Glycol ethers	7,608,780	0	1 / 1,700
24	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Ethylbenzene	7,445,756	2.01	1 / 400
25	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	1,2,4-Trimethylbenzene	7,385,574	1.75	1 / 1,000

Industry/Chemical Combinations

Table 3 lists the top industry/chemical combinations for amounts of neurotoxins, carcinogens, and reproductive or developmental toxins shipped in products between 1995 and 2000. While chlorine in specialty cleaning products tops the list, the paints, varnishes, and enamels industry accounts for 10 of these 25 top combinations. Lead compounds shipped in motor vehicle and automobile bodies is number two on the list, and accounts for almost 12 percent of all the chemicals examined in this report that were shipped in products between 1995 and 2000. While people are unlikely to be directly exposed to the lead or ethylene glycol contained in auto bodies, they may be exposed to other substances such as toluene and n-hexane also reported as shipped in products by this industry.

Amount Shipped in Products Not Intended to Be in the Product

Most of the chemicals shipped as or in products are intended to be part of the product, such as formulation components. However, some chemicals become part of products because they are present as impurities in raw materials or because they are created as by-products during manufacture. They could also be materials that were used in processing, such as solvents or catalysts, or they could be reactants that were not completely consumed or removed. No matter what the reason, they represent an unintended potential source of exposure.

Surprisingly, large amounts of neurotoxins, carcinogens, and reproductive or developmental toxins are simply “along for the ride” in a variety of products likely to be found in the home. Overall, over 10 million pounds of these chemicals shipped as or in products are not supposed to be there. For individual chemicals and industries, however, the percentages are much higher. For example, 92 percent of these chemicals shipped in products by fabric finishers and 47 percent of these chemicals shipped in non-rubberized coated fabrics are not intended to be part of the actual product (*see* Table 2). Similarly, thirty-two percent of the ethylene glycol shipped in adhesives and sealants is not intended to be there (*see* Appendix I, Table 3).

Releases to the Environment per Pound of Intended Use in Product

These data show that, on average, for every pound of neurotoxins, carcinogens, or reproductive or developmental toxins facilities report as released to the air, water, or land, manufacturers ship 42 pounds of these chemicals as or in products. And the 42 pounds is just an average. For some industry/chemical combinations, the ratio is much higher. For example, for neurotoxic glycol ethers in soaps and detergents, the ratio is 1,800 to one. For some volatile organic chemicals in paints and adhesives, the ratio is in the hundreds.

Obviously, facilities are in the business of producing products and not releases to the environment, so it is not surprising that more chemicals end up in products than in air, water, or land. Still, these data are important because of the large numbers and the scarcity of such information except for New Jersey and Massachusetts. Releases to the environment are reported nationally and sometimes regulated under state and federal programs. Amounts shipped as or in products are only reported in two states, and regulation is far more elusive. While it is well beyond the scope of this report to compare the relative risk from living near a facility that produces paint to painting the average home, the large ratio of amounts in products to releases suggests that the products represent potentially important sources of exposure.



The U.S. Food and Drug Administration and Bisphenyl-A

The U.S. Food and Drug Administration (FDA) regulates levels of additives and contaminants in food sold in the United States. In general, the agency puts the burden of proof on industry to show that additives are safe before approving their use in food. The FDA's policy for unintentional or environmental contaminants is less clear-cut: its action levels and tolerances for unintentional contaminants are based partly on health considerations and partly on the potential market impacts of its decisions and regulations. For substances that will find their way into food during preparation, storage, or serving, however, FDA policy is even less transparent. Such is the case with plastics containing bisphenyl-A (BpA).

BpA was originally developed in the early twentieth century and has been known to act like a hormone in the human body since the 1930s. Polymerized into polycarbonate plastic, it is used in thousands of clear plastic products including baby bottles. Not all the BpA gets polymerized. Some can migrate or leach from polycarbonate plastic, and peer-reviewed studies have documented health effects in the offspring of animals exposed to BpA at and below concentrations of parts per billion.

A 1997 FDA study found that BpA migrates out of polycarbonate baby bottles into liquid inside the bottles when they are heated.¹² This result was confirmed by *Consumer Reports*.¹³ A Japanese university study also found that BpA migrated from polycarbonate containers, including baby bottles, at even lower temperatures than FDA studied, again resulting in food concentrations of BpA in the parts-per-billion range.¹⁴ In Japan, the finding prompted a swift change in the Japanese school lunch program that provided hot soup in polycarbonate bowls.

Despite these actions, FDA declined a 1999 petition from a coalition of public interest groups asking the agency to investigate BpA's effects. The agency also refused the petition's request to identify the range of food containing products that would likely contain or become contaminated with BpA or similar chemicals and to require them to meet a standard of safety.¹⁵

The FDA's inaction continues in the face of new evidence that low-levels of BpA are harmful. Most recently researchers were able to trace a stunning increase in the equivalent of Down's Syndrome in a population of laboratory rats when a new cleaning procedure for the animals' polycarbonate water bottles greatly increased the concentration of BpA in their drinking water.¹⁶



Policy Implications

The landmark environmental laws of the 1970s have succeeded in reducing the end-of-the-pipe pollution that results from industrial activities. The recent Toxics Release Inventory (July 2003) showed a continuation of the trend toward declining levels of emissions to air, land, and water for the facilities required to report. Unfortunately, as *Cabinet Confidential* shows, smokestack and pipe emissions are only part of the problem, contributing on average just one pound of pollution for every 42 pounds of chemicals put into the manufactured goods themselves.

These products have a life cycle all their own from the factory, to the home or office, and then finally as waste. During this cycle they can expose consumers, workers, and the environment to many of the same chemicals that our pollution laws have targeted. At the same time, new studies increasingly link chemicals to diseases and other health effects, often at very low levels of exposure. The Centers for Disease Control continues to document widespread exposure to commercial chemicals by examining blood and tissue samples from a broad cross section of Americans.¹⁷ Still, federal policy has largely ignored the issue of chemicals in products, even as the laws governing pesticides and drinking water have been updated to reflect new scientific findings.

The emerging understanding of health effects from common commercial chemicals, combined with our increased awareness of the sources and extent of exposure to them, demands an urgent reexamination of federal policy. Key questions include: What chemicals are in this product? Are they safe? What alternatives exist? These questions must move from the periphery to the center of federal environmental policy making, just as they have in Europe and in several states.

Tracking Chemicals in Products

As the “Methodology” section in Appendix II makes clear, this report was only possible because of policies in Massachusetts and New Jersey requiring facilities to report chemical use. These states are alone in requiring manufacturers to distinguish between the chemicals they use, generate, and put in products from the amounts they emit into the environment, and to document both sources of potential exposure.

New Jersey and Massachusetts also have planning programs specifically designed to reduce the use of toxic chemicals “at the source” of manufacturing. The Pollution Prevention Act and the Toxics Use Reduction Act, respectively, require industrial facilities to examine their processes for opportunities to reduce the use or generation of toxic chemicals. Massachusetts also provides technical assistance. The combination of expanded right-to-know and use reduction planning has shown some success, especially in reducing the amount of chemical waste.

Similar “source reduction” laws in California and Oregon have proven less successful, partly because there is no expanded right-to-know requirement to create incentives for taking the planning requirements seriously and to track results. The same is true of the federal Pollution Prevention Act. Combining source reduction planning with chemical use reporting at the state and federal level could yield substantial reductions in the use of toxic chemicals. A federal program to report chemical use should be established to protect the public’s right-to-know and to spur corporations’ interest in positive public relations that would drive innovations to reduce the use of toxic chemicals in products. These two forces are widely credited by industry and environmentalists with the success of the federal Toxic Release Inventory (TRI) program in reducing toxic pollution.

Weak Law Leads to Voluntary Measures on Health Effects

Some health effects information is available for most of the chemicals identified in this report. Either federal or California lists, for example, identify certain chemicals as neurotoxins, carcinogens, or reproductive or developmental toxins. For the vast majority of the 70,000 chemicals used in commerce, however, publicly available health effects information is non-existent.

This is partly due to the federal law governing toxics in products, which has turned out to be a paper tiger (in contrast to the landmark pollution laws). For the chemicals already on the market at the time of its passage, the Toxic Substances Control Act (TSCA) requires EPA to show that a chemical presents an “unreasonable risk” and to demonstrate likely human exposure before the EPA can require it to be

tested. Because the testing is needed to help demonstrate risk, the law has been ineffective with the large group of untested chemicals. TSCA does require pre-manufacture notices for those chemicals introduced since the passage of the law, and EPA has used this provision to raise questions about some chemicals—prompting industry to withdraw them—and has moved to restrict the use of others. Yet, the majority of chemicals in commerce remain unregulated by this law.

Spurred by an investigation by Environmental Defense, the EPA found that only seven percent of the approximately 3,000 chemicals produced in high volumes (in quantities over one million pounds per year) had a basic set of publicly available toxicity information.¹⁸ The percentage is believed to be worse for the tens of thousands of additional chemicals produced in smaller volumes.

In 1998, the EPA and the American Chemistry Council, with the participation of Environmental Defense, set up the voluntary High Production Volume (HPV) Challenge Program to develop basic health effects information by 2005 for chemicals made or imported in quantities of one million pounds or more per year. Chemicals raising “red flags” in this basic screening would be singled out for comprehensive testing. As of summer 2003, the program’s progress was mixed. Commitments to evaluate hundreds of chemicals have been made, but there are approximately 500 “orphaned” chemicals for which industry will not take responsibility and many others for which fundamental toxicological assessments have yet to be done. Thus the program has produced only modest results so far.¹⁹ Work on a similar program, the Voluntary Children’s Testing Program, is too preliminary to provide results.

Consumer Product Safety Commission Fails to Fill the Gap

The U.S. Consumer Product Safety Commission (CPSC) has failed to fill the gap left by environmental laws. Technically empowered to ensure product safety, including protection from chronic environmental hazards in products, the CPSC has often been unwilling or unable to act. By its very nature, the commission is reactive and not preventive. It is designed to respond to evidence of harm in products on the market, rather than to identify hazards or certify products prior to their introduction. CPSC is particularly ill-suited to preventing chronic environmental hazards where the evidence of harm may manifest itself years after exposure to a toxic chemical. The CPSC is also hobbled by protocols requiring it to first work with industry groups to voluntarily withdraw or withhold a product that is harmful before it can order a ban. Compared to the European Union and Japan, the CPSC has been slow, even recalcitrant, to act in the face of science indicating certain products are hazardous. (*See* the sidebar on vinyl toys on page 17.)

The Food and Drug Administration and Toxics in Products

The FDA has jurisdiction over certain consumer products that contain toxic chemicals, including food wraps and cosmetics, yet it has failed to use its authority to ensure these products are safe. In November 2002, for example, the FDA's review panel for cosmetics ingredients declined to follow the lead of the European Union and ban carcinogens and reproductive toxins in cosmetics. In 1998, the FDA also failed to respond to new science showing the ubiquitous chemical bisphenol-A, used as a softener for plastic, posed a hazard by leaching from baby bottles, food wraps, and other items containing polycarbonate plastic. (*See bisphenol-A sidebar, page 23.*)

Europe Integrates Health Effects and Chemical Regulation

Over the last several years, the European Union has moved to rationalize and integrate its regulation of toxic chemicals in ways that provide a model for the United States. The Registration, Evaluation, and Authorization of Chemicals (REACH) policy²⁰ was formally proposed in May 2003 and is almost sure to be enacted in some form by the EU over the next three years. The registration policy would require industry to generate health effects information for chemicals that have none by a specific deadline. For chemicals produced in very large quantities, or others that raise concerns during the registration phase, the EU member states will evaluate the science and propose possible restrictions. Chemicals already identified as carcinogens, reproductive toxins, mutagens, or Persistent Bioaccumulative Toxins (PBTs)—and others the registration process may reveal—will require authorization on a case-by-case basis in order to continue their use in products or manufacturing. The authorization will look at such real world issues as: Does the manufacturer need to use the chemical in this product? How feasible are alternatives?

Though the REACH proposal may be further modified by the European Parliament, it has set a high bar for policy on industrial and commercial chemicals. Few could argue with the idea that we should know the health effects of chemicals that are used in products or released into the environment. Similarly, it makes sense to minimize or eliminate the use of those chemicals we already know (or later discover) to be harmful. Still, U.S. policy has not explicitly adopted these goals. Instead, we have relied on a mixture of voluntary initiatives like the HPV Challenge and crisis management and intervention when the evidence of harm is overwhelming and acute.

Products as Waste and Extended Producer Responsibility

Even when products such as discarded computers and other electronic equipment don't expose consumers to the toxics they contain during their useful life, they may expose other people and the environment when they become waste. Investigators have uncovered the terrible environmental and human health effects of China's sprawling, unregulated computer "recycling" industry.²¹ Recycling centers for large appliances and cars have also been hampered by the toxic content of the products they dismantle, and some have contributed to or become Superfund sites.²² State legislatures and members of Congress are considering plans to regulate the toxic waste of the electronics industry with mechanisms similar to the beverage container deposit systems that exist in several states.²³ At the same time, European and Japanese experience suggests that policies requiring manufacturers to take responsibility for the lifecycle of the product produce better results. Such policies provide an incentive for manufacturers to incorporate safety into product design more than policies that place the primary responsibility on the government.

State Governments' Innovations

State governments have been quicker to respond to the issue of toxic chemicals in products than the federal government. Massachusetts and New Jersey have both tracked chemical use and chemicals shipped as or in products for almost two decades. California voters passed Proposition 65 in 1986, which requires manufacturers using a carcinogen or reproductive toxin to issue a warning prior to exposing the public. This law has led to the reformulation of hundreds of products by manufacturers seeking to avoid printing a warning statement on packaging and has generated much useful information on the health effects of certain chemicals. California's air agencies have also regulated the toxic content of some consumer products because of their contribution to smog and ambient levels of toxic air pollution. In 2003, Governor Gray Davis signed legislation phasing out the use of two of the three most common flame retardants because of evidence that they were accumulating in breast milk of women living throughout the state and because safer alternatives were available. Washington State has adopted a goal of phasing out Persistent and Bio-accumulative Toxins (PBTs) in the state. In each of these cases, the state governments have shown a greater willingness to tackle the problem of toxic chemicals closer to the source than has the federal government.



Recommendations

Products likely to be found in the home may contain far higher amounts of potentially toxic chemicals—and thus may present a much greater exposure risk—than manufacturers release into the air, water, and soil. The actual quantities of these chemicals and their effects on humans are unknown, making them an unacceptable health risk for Americans. The following policy recommendations are intended to address this issue:

- 1.** Congress should enact a national system to track and report chemical use in products, modeled on the programs in New Jersey and Massachusetts.
- 2.** Congress should reform the Toxic Substances Control Act so that the EPA can more effectively anticipate and prevent adverse health effects from toxic chemicals in products. The reform should be modeled generally on the European Union’s REACH policy and base allowable exposure levels on children’s heightened vulnerability to chemicals, similar to the Food Quality Protection Act’s standard for pesticides.
- 3.** Congress should continue to fund bio-monitoring and health tracking initiatives at the Centers for Disease Control (CDC) and state health departments to improve our understanding of links between toxics and illness and to help inform enlightened public policy.
- 4.** The CDC should expand its bio-monitoring program where feasible to include chemicals found in products potentially used in the home, such as those identified in this report.
- 5.** The CPSC and FDA could vastly improve their performance simply by implementing existing law. The FDA should reverse its decision on toxic chemicals in cosmetics to bring it into line with Europe, and it should end the practice of delegating decisions to an industry-funded panel. Similarly, the CPSC should revisit its decisions to allow the continued use of phthalates in toys despite readily available alternatives.
- 6.** States should continue to innovate and compensate for shortcomings in national chemical policy, as Washington, California, New Jersey, and Massachusetts have done.
- 7.** States should devise their own bio-monitoring and health-tracking programs to develop crucial local data and inform regulatory interventions.

Appendix I: Tables

This appendix contains complete versions of the data tables presented in the “Results and Discussion” section of the report.

TABLE 1

Known or Suspected Neurotoxins, Carcinogens, or Reproductive or Developmental Toxins Shipped As or in Products Likely Found in the Home, 1995-2000

Rank	Chemical	Carcinogen	Reproductive/Developmental Toxin	Neurotoxin	Number of Facilities Reporting the Chemical	Amount of the Chemical Shipped as or in Product (pounds)	Percent of Total Shipped As or in Product	Percent of Total Shipped in Product Not Intended to Be in Product	Releases of Chemical per Pound of Intended Use in Product
1	Chlorine	--	--	y	11	207,151,360	19.50	0.0	1 / 38,000
2	Lead compounds	y	--	y	25	150,661,278	14.18	0.0	1 / 40,000
3	Toluene	--	y	y	160	129,203,585	12.16	1.2	1 / 18
4	Xylene (mixed isomers)	--	--	y	98	78,453,460	7.39	1.0	1 / 85
5	Glycol ethers	--	--	y	100	73,125,317	6.88	0.6	1 / 40
6	Ethylene glycol	--	--	y	36	48,539,935	4.57	9.2	1 / 2,500
7	Creosote	y	--	y	1	46,585,535	4.39	0.0	1 / 4,900
8	Methyl ethyl ketone	--	--	y	113	44,772,785	4.21	3.8	1 / 15
9	n-Hexane	--	--	y	26	32,730,852	3.08	0.7	1 / 30
10	Methanol	--	--	y	77	21,938,673	2.07	4.1	1 / 12
11	1,1-Dichloro-1-fluoroethane (HCFC-141b)	--	--	y	6	16,779,390	1.58	4.4	1 / 42
12	Dichloromethane	y	--	y	36	14,311,797	1.35	0.6	1 / 11
13	Methyl isobutyl ketone	--	--	y	65	12,787,886	1.20	1.2	1 / 13
14	Cresol (mixed isomers)	--	--	y	3	12,264,839	1.15	0.0	1 / 3,400
15	Di(2-ethylhexyl) phthalate	y	--	--	18	11,255,981	1.06	0.0	1 / 2,900
16	Dibutyl phthalate	--	--	y	17	10,007,413	0.94	0.0	1 / 12,000
17	Methyl methacrylate	--	--	y	14	9,637,337	0.91	10.1	1 / 95
18	Ethylbenzene	--	--	y	29	9,440,257	0.89	5.6	1 / 84
19	Ammonia	--	--	y	61	8,825,612	0.83	2.8	1 / 10
20	Dichlorodifluoromethane (CFC-12)	--	--	y	5	8,348,297	0.79	0.0	1 / 48
21	1,2,4-Trimethylbenzene	--	--	y	27	7,926,658	0.75	1.6	1 / 180
22	Sodium phosphate, tribasic	--	--	y	6	7,275,650	0.68	0.0	1 / 98,000
23	Methyl tert-butyl ether	--	--	y	5	7,177,334	0.68	0.0	1 / 790
24	Nickel compounds	y	--	--	8	7,078,892	0.67	0.3	1 / 4,800
25	Ethyl acetate	--	--	y	32	5,970,218	0.56	0.0	1 / 2.8
26	Thiabendazole	--	--	y	1	5,672,578	0.53	0.0	1 / 1,500
27	Phthalic anhydride	--	--	y	4	5,013,651	0.47	67.9	1 / 1,200
28	Sodium hypochlorite	--	--	y	28	4,277,299	0.40	0.0	1 / 480
29	4,4'-Isopropylidenediphenol	--	--	y	2	3,990,759	0.38	0.0	1 / 200,000
30	Arsenic Compounds	y	--	y	5	3,896,874	0.37	0.0	1 / 3,900,000
31	Trichloroethylene	y	--	y	11	3,775,267	0.36	55.8	1 / 3.4
32	Trichlorofluoromethane (CFC-11)	--	--	y	6	3,183,025	0.30	0.0	1 / 45
33	Tetrachloroethylene	y	--	y	8	3,064,161	0.29	0.0	1 / 22
34	Dimethyl phthalate	--	--	y	2	2,957,106	0.28	0.0	1 / 3,000,000
35	Manganese	--	--	y	3	2,907,768	0.27	0.0	Zero
36	Styrene	--	--	y	19	2,896,537	0.27	0.7	1 / 28
37	n-Methyl-2-pyrrolidone	--	y	y	21	2,670,544	0.25	0.0	1 / 35
38	Butyl acetate	--	--	y	11	2,666,367	0.25	0.0	1 / 12
39	Cyclohexane	--	--	y	8	2,663,615	0.25	0.3	1 / 54
40	Manganese compounds	--	--	y	7	2,401,058	0.23	0.0	1 / 22,000
41	Chlorodifluoromethane (HCFC-22)	--	--	y	7	2,372,225	0.22	0.0	1 / 31
42	Benzene	y	y	y	3	1,890,533	0.18	0.0	1 / 830
43	Cyclohexanone	--	--	y	2	1,870,648	0.18	0.0	1 / 330
44	Caprolactam dust and vapor	--	--	y	1	1,405,373	0.13	0.0	1 / 1,900
45	Vinyl acetate	--	--	y	17	1,396,749	0.13	0.1	1 / 52
46	1,1,1-Trichloroethane	--	--	y	16	1,197,090	0.11	0.0	1 / 26
47	Phenol	--	--	y	5	1,040,723	0.10	0.0	1 / 17
48	Sodium nitrite	--	--	y	17	1,031,756	0.10	7.4	1 / 49
49	Ethylenediamine	--	--	y	2	999,749	0.09	0.0	1 / 2,100
50	Naphthalene	y	--	y	16	924,514	0.09	0.6	1 / 320
51	Furan, tetrahydro-	--	--	y	4	910,292	0.09	0.0	1 / 62
52	Sodium dodecylbenzenesulfonate	--	--	y	3	861,856	0.08	0.0	1 / 120,000
53	Ethylene thiourea	y	y	--	1	846,339	0.08	0.0	Zero
54	Formaldehyde	y	--	y	15	841,673	0.08	0.1	1.0 / 1
55	Methyl acrylate	--	--	y	3	748,234	0.07	0.0	1 / 370
56	Antimony	--	--	y	4	728,681	0.07	0.0	Zero
57	n,n-Dimethylformamide	--	--	y	17	562,515	0.05	5.9	1 / 1.3
58	Cumene	--	--	y	8	533,196	0.05	0.0	1 / 320

TABLE 1

CONTINUED

Rank	Chemical	Carcinogen	Reproductive/ Developmental Toxin	Neurotoxin	Number of Facilities Reporting the Chemical	Amount of the Chemical Shipped As or in Product (pounds)	Percent of Total Shipped As or in Product	Percent of Total Shipped in Product Not Intended to Be in Product	Releases of Chemical per Pound of Intended Use in Product
59	Folpet	y	--	--	2	510,555	0.05	0.0	Zero
60	Antimony trioxide	y	--	--	5	492,133	0.05	0.0	1 / 98,000
61	p-Xylene	--	--	y	1	446,320	0.04	0.0	1 / 21
62	Isophorone	--	--	y	2	424,879	0.04	0.0	1 / 52
63	Triethylamine	--	--	y	11	416,241	0.04	5.1	1 / 77
64	tert-Butyl alcohol	--	--	y	3	415,658	0.04	0.0	1 / 640
65	Lead	y	y	y	4	375,812	0.04	0.0	1 / 34,000
66	Aluminum (fume or dust)	--	--	y	7	353,117	0.03	0.0	1 / 1,200
67	Formic acid	--	--	y	13	352,153	0.03	0.0	1 / 90
68	Thiram	--	--	y	1	332,535	0.03	0.0	Zero
69	Cyanide compounds	--	--	y	3	293,883	0.03	0.0	1 / 540
70	2-Mercaptobenzothiazole	--	--	y	1	278,049	0.03	0.0	Zero
71	Tributyltin methacrylate	--	y	y	1	272,330	0.03	0.0	Zero
72	Dichlorotetrafluoroethane (CFC-114)	--	--	y	2	234,899	0.02	0.0	1 / 13
73	Toluenediisocyanate (mixed isomers)	y	--	y	11	209,697	0.02	42.7	1 / 41
74	1,4-Dichlorobenzene	y	--	y	1	190,932	0.02	0.0	Zero
75	Nickel	y	--	y	4	184,781	0.02	0.0	1 / 2,800
76	C.I. Direct Blue 218	y	--	--	2	163,237	0.02	0.0	Zero
77	2-Phenylphenol	y	--	y	2	156,418	0.01	0.0	1 / 6,300
78	p-Phenylenediamine	--	--	y	1	152,696	0.01	0.0	1 / 17,000
79	Biphenyl	--	--	y	4	147,570	0.01	0.0	1 / 42
80	Cupric sulfate	--	--	y	1	118,000	0.01	0.0	1.6 / 1
81	Diethanolamine	--	--	y	9	112,676	0.01	1.0	1 / 17
82	nicotine and salts	--	y	y	2	106,695	0.01	0.0	Zero
83	Diglycidyl resorcinol ether	y	--	y	1	98,996	0.01	0.0	Zero
84	Chlorothalonil	y	--	y	1	95,295	0.01	0.0	1 / 95,000
85	Hydroquinone	--	--	y	1	94,203	0.01	0.0	1 / 13,000
86	Cadmium compounds	y	--	--	4	87,960	0.01	0.0	1 / 320
87	o-Xylene	--	--	y	2	86,544	0.01	5.6	Zero
88	Piperonyl butoxide	--	--	y	1	70,399	0.01	0.0	Zero
89	Arsenic	--	--	y	1	69,979	0.01	0.0	1 / 14,000
90	Lithium carbonate	--	y	y	1	65,446	0.01	0.0	Zero
91	Aluminum oxide (fibrous forms)	--	--	y	3	64,339	0.01	0.0	Zero
92	Tetracycline hydrochloride	--	y	--	1	47,135	0.00	0.0	Zero
93	Zineb	--	--	y	1	44,545	0.00	0.0	Zero
94	Thiourea	y	--	--	1	41,447	0.00	0.0	1 / 8,300
95	Hydrazine sulfate	y	--	y	2	38,769	0.00	0.0	1 / 39,000
96	Cadmium	y	y	y	1	34,211	0.00	0.0	Zero
97	Bis(tributyltin) oxide	--	--	y	1	29,088	0.00	0.0	Zero
98	Sodium azide	--	--	y	1	27,000	0.00	0.0	Zero
99	Silver nitrate	--	--	y	1	15,851	0.00	0.0	Zero
100	Acetaldehyde	y	--	y	2	11,714	0.00	0.0	1 / 6.5
101	4,4'-Methylenebis(2-chloroaniline)	y	--	y	2	10,600	0.00	0.0	1 / 290
102	Nitroglycerin	--	--	y	1	7,332	0.00	0.0	1 / 7,300
103	Cobalt	y	--	y	1	6,584	0.00	100.0	Zero
104	2-Methoxyethanol	--	y	y	5	6,113	0.00	0.0	1.8 / 1
105	Propylene oxide	y	--	y	2	5,856	0.00	100.0	Undefined
106	Ethyl acrylate	y	--	y	5	5,569	0.00	100.0	Undefined
107	Freon 113	--	--	y	1	4,500	0.00	0.0	1 / 45
108	Benzyl chloride	y	--	y	2	3,325	0.00	100.0	Undefined
109	Acrylonitrile	y	--	y	4	706	0.00	87.5	13 / 1
110	Dimethyl sulfate	y	--	y	1	497	0.00	100.0	Undefined
111	Toluene-2,4-diisocyanate	--	--	y	2	246	0.00	0.0	Zero
112	Polychlorinated biphenyls (PCBs)	y	y	y	1	18	0.00	100.0	Zero
113	n-Methylolacrylamide	y	--	y	3	8	0.00	0.0	3.1 / 1
114	Dioxin and Dioxin-like Compounds	y	--	--	3	3 (grams)	0.00	100.0	Undefined
Total for all records					466	1,062,264,637	100.00	1.8	1 / 42

TABLE 2

Industries Ranked by Amounts of 25 Known or Suspected Neurotoxins, Carcinogens, or Reproductive or Developmental Toxins Shipped As or in Products Likely Found in the Home, 1995-2000

Rank	Primary SIC Code	Industry Classification	Example OF Products Produced by This Industry	Number of Facilities Reporting Chemicals of Interest	Amount Shipped As or in Product (pounds)	Percent of Total Shipped As or in Product	Percent of Total Shipped in Product Not Intended to Be in Product	Releases of Chemicals per Pound of Intended Use in Product
1	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	house paint, wood stain	64	266,003,016	25.04	2.0	1 / 230
2	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	disinfectant, dry cleaning, floor wax	17	259,478,985	24.43	0.0	1 / 5,600
3	3711	Motor Vehicles And Passenger Car Bodies	cars, trucks	3	182,848,676	17.21	2.3	1 / 330
4	2891	Adhesives And Sealants	epoxy, pipe sealing compound	36	147,696,824	13.90	1.0	1 / 120
5	2491	Wood Preserving	structural lumber, wood fence	5	50,524,985	4.76	0.0	1 / 5,300
6	2841	Soap And Other Detergents, Except Specialty Cleaners	detergent, soap	14	28,268,535	2.66	0.0	1 / 2,300
7	3089	Plastics Products, NEC	plastic cups, bubble packing	23	23,142,164	2.18	3.6	1 / 21
8	3069	Fabricated Rubber Products, NEC	bibs, bottles, rubberized fabric	18	19,863,659	1.87	3.5	1 / 7.4
9	2834	Pharmaceutical Preparations	cold remedies, drugs	23	14,208,961	1.34	1.7	1 / 16
10	2893	Printing Ink	newspaper	15	11,954,489	1.13	0.0	1 / 130
11	2844	Perfumes, Cosmetics, And Other Toilet Preparations	shampoo, deodorant	13	11,567,696	1.09	0.0	1 / 200
12	3086	Plastics Foam Products	plastic foam cups, carpet cushion	14	8,319,520	0.78	0.0	1 / 14
13	2833	Medicinal Chemicals And Botanical Products	drugs, herbs, vitamins	13	6,508,898	0.61	10.0	1 / 12
14	3996	Linoleum, Asphalted-felt-base, And Other Hard Surface Floor	linoleum floor tile	3	5,821,246	0.55	0.1	1 / 150
15	2295	Coated Fabrics, Not Rubberized	artificial leather, waxed cloth	17	3,581,117	0.34	47.4	1.6 / 1
16	2672	Coated And Laminated Paper, NEC	cellophane tape, flypaper	21	3,282,387	0.31	15.9	1.1 / 1
17	3411	Metal Cans	aluminum cans, tin cans	5	2,696,039	0.25	0.0	1 / 2.3
18	3944	Games, Toys, And Children's Vehicles, Except Dolls And Bicycles	toys	1	2,385,425	0.22	0.0	1 / 160
19	2493	Reconstituted Wood Products	particleboard, fiberboard wall tile	1	2,189,664	0.21	34.0	1 / 72
20	2269	Finishers Of Textiles, NEC	dyed linen fabrics	11	1,920,510	0.18	92.3	5.9 / 1
21	3021	Rubber And Plastics Footwear	plastic boots, rubber sandals	1	1,803,643	0.17	0.0	Zero
22	2679	Converted Paper And Paperboard Products, NEC	paper cups, paper plates	9	902,283	0.08	13.2	1 / 1.2
23	2087	Flavoring Extracts And Flavoring Syrups, NEC	drink concentrates, food colors	6	818,866	0.08	8.2	1 / 39
24	3949	Sporting And Athletic Goods, NEC	fishing gear, tennis goods	5	693,212	0.07	0.0	1.4 / 1
25	3088	Plastics Plumbing Fixtures	sinks, tubs	2	687,175	0.06	0.0	1 / 9.3
26	2754	Commercial Printing, Gravure	envelopes, magazines	12	668,952	0.06	3.6	1.8 / 1
27	2621	Paper Mills	wallpaper, book paper	24	623,692	0.06	9.0	2.5 / 1
28	3961	Costume Jewelry And Costume Novelties, Except Precious Metal	costume jewelry, watchbands	2	467,596	0.04	0.0	1 / 160,000
29	3111	Leather Tanning And Finishing	garment leather, glove leather	5	453,902	0.04	41.2	1.6 / 1
30	2066	Chocolate And Cocoa Products	candy, cocoa mix	3	283,322	0.03	2.1	1 / 21
31	2013	Sausages And Other Prepared Meat Products	bacon, hot dogs, pastrami	2	281,506	0.03	0.0	1 / 12
32	3262	Vitreous China Table And Kitchen Articles	china cooking ware, dishes	1	272,406	0.03	0.0	1 / 180
33	2091	Canned And Cured Fish And Seafoods	canned and pickled fish	1	264,552	0.02	0.0	Zero
34	2671	Packaging Paper And Plastics Film, Coated And Laminated	bread wrappers, coated paper	8	227,643	0.02	93.9	58 / 1
35	2253	Knit Outerwear Mills	jackets, shirts	1	222,207	0.02	0.1	1 / 55
36	3965	Fasteners, Buttons, Needles, And Pins	buttons, needles, zippers	2	215,068	0.02	0.0	1 / 20,000
37	2399	Fabricated Textile Products, NEC	cloth diapers, nets, seat belts	1	193,218	0.02	0.0	1 / 3.1
38	3952	Lead Pencils, Crayons, And Artists' Materials	canvas, chalk, paint	2	170,309	0.02	0.0	1 / 190
39	3085	Plastics Bottles	plastic bottles	1	155,659	0.01	0.0	1 / 3,100
40	2631	Paperboard Mills	cardboard, milk cartons	5	118,000	0.01	0.0	1.9 / 1
41	3953	Marking Devices	rubber stamps, ink pads	1	78,888	0.01	0.0	1 / 35
42	3220	Glass And Glassware, Pressed Or Blown	glass bottles, jars, art glass	1	76,851	0.01	0.0	Zero
43	2434	Wood Kitchen Cabinets	kitchen cabinets	1	66,400	0.01	0.0	Zero
44	2299	Textile Goods, NEC	burlap, felt, rug backing	4	58,944	0.01	100.0	Undefined
45	2095	Roasted Coffee	coffee	2	58,564	0.01	100.0	Undefined
46	3951	Pens, Mechanical Pencils, And Parts	pens, cartridges	3	49,470	0.00	0.0	1 / 12
47	2393	Textile Bags	duffel bags, knapsacks	1	29,963	0.00	100.0	Zero
48	2653	Corrugated And Solid Fiber Boxes	corrugated boxes, pallets	2	27,000	0.00	0.0	Zero
49	2261	Finishers Of Broadwoven Fabrics Of Cotton	cotton fabric	2	12,870	0.00	100.0	Zero
50	2262	Finishers Of Broadwoven Fabrics Of Manmade Fiber And Silk	silk and other fabric	7	12,675	0.00	100.0	Undefined
51	2657	Folding Paperboard Boxes, Including Sanitary	frozen food containers	1	4,200	0.00	100.0	Undefined
52	2759	Commercial Printing, NEC	calendars, cards	8	2,787	0.00	100.0	Undefined
53	2676	Sanitary Paper Products	disposable diapers, toilet paper	1	18	0.00	100.0	Zero
Total for all records				466	1,062,264,637	100.00	1.8	1 / 42

TABLE 3

Industry/Chemical Combinations by Amounts of Known or Suspected Neurotoxins, Carcinogens, or Reproductive or Developmental Toxins Shipped As or in Products Likely Found in the Home, 1995-2000

Rank	SIC Code	Industry Classification	Chemical	Amount of the Chemical Shipped As or in Product (pounds)	Percent of Total Shipped in Product Not Intended to Be in Product	Releases of Chemical per Pound of Intended Use in Product
1	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Chlorine	207,118,000	0	Zero
2	3711	Motor Vehicles And Passenger Car Bodies	Lead compounds	126,199,317	0	Zero
3	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Xylene (mixed isomers)	65,515,051	0.99	1 / 320
4	2891	Adhesives And Sealants	Toluene	58,044,213	0	1 / 340
5	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Toluene	54,837,908	0	1 / 160
6	2491	Wood Preserving	Creosote	46,585,535	0	1 / 4,900
7	2891	Adhesives And Sealants	n-Hexane	30,766,665	0	1 / 300
8	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Glycol ethers	30,655,568	0	1 / 6,200
9	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Glycol ethers	26,845,953	0.11	1 / 290
10	3711	Motor Vehicles And Passenger Car Bodies	Ethylene glycol	23,465,057	12.42	Zero
11	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Ethylene glycol	20,545,349	0	1 / 9,300
12	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Methyl ethyl ketone	19,886,702	1.26	1 / 110
13	2891	Adhesives And Sealants	Methyl ethyl ketone	19,044,027	0	1 / 85
14	3069	Fabricated Rubber Products, NEC	Lead compounds	17,601,129	0	1 / 840,000
15	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Methyl isobutyl ketone	12,054,501	1.09	1 / 340
16	2841	Soap And Other Detergents, Except Specialty Cleaners	Cresol (mixed isomers)	12,023,900	0	1 / 3,400
17	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Methanol	11,103,556	0.14	1 / 310
18	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Dichloromethane	10,745,460	0	1 / 230
19	3711	Motor Vehicles And Passenger Car Bodies	Toluene	9,412,868	2.39	1 / 1,700
20	2834	Pharmaceutical Preparations	Dichlorodifluoromethane (CFC-12)	8,348,297	0	1 / 48
21	2891	Adhesives And Sealants	Methyl methacrylate	8,253,035	0	1 / 96
22	3089	Plastics Products, NEC	1,1-Dichloro-1-fluoroethane (HCFC-141b)	7,635,941	0	1 / 39
23	2841	Soap And Other Detergents, Except Specialty Cleaners	Glycol ethers	7,608,780	0	1 / 1,700
24	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Ethylbenzene	7,445,756	2.01	1 / 400
25	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	1,2,4-Trimethylbenzene	7,385,574	1.75	1 / 1,000
26	2891	Adhesives And Sealants	Xylene (mixed isomers)	7,178,506	0	1 / 420
27	3711	Motor Vehicles And Passenger Car Bodies	Methyl tert-butyl ether	7,177,334	0	1 / 11,000
28	3086	Plastics Foam Products	1,1-Dichloro-1-fluoroethane (HCFC-141b)	6,902,485	0	1 / 41
29	3089	Plastics Products, NEC	Nickel compounds	6,800,000	0	1 / 6,500
30	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Sodium phosphate, tribasic	6,362,535	0	1 / 580,000
31	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Ammonia	6,140,537	0	1 / 3,100
32	2833	Medicinal Chemicals And Botanical Products	Thiabendazole	5,672,578	0	1 / 1,500
33	3996	Linoleum, Asphalted-felt-base, And Other Hard Surface Floor	Di(2-ethylhexyl) phthalate	5,640,858	0	1 / 41,000
34	3711	Motor Vehicles And Passenger Car Bodies	Xylene (mixed isomers)	5,244,368	0	1 / 22
35	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Phthalic anhydride	5,013,651	67.88	1 / 1,200
36	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Sodium hypochlorite	4,269,422	0	1 / 8,100
37	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Lead compounds	4,063,696	0	1 / 1,900
38	2844	Perfumes, Cosmetics, And Other Toilet Preparations	Glycol ethers	3,978,494	0	1 / 27,000
39	2491	Wood Preserving	Arsenic Compounds	3,869,471	0	1 / 3,900,000
40	2891	Adhesives And Sealants	Ethylene glycol	3,683,922	35.93	1 / 2,000
41	2841	Soap And Other Detergents, Except Specialty Cleaners	Methanol	3,424,222	0	1 / 1,100
42	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Dibutyl phthalate	3,336,931	0	1 / 15,000
43	2893	Printing Ink	Methyl ethyl ketone	3,280,121	0	1 / 99
44	3089	Plastics Products, NEC	Di(2-ethylhexyl) phthalate	3,246,785	0	1 / 1,300
45	2834	Pharmaceutical Preparations	Trichlorofluoromethane (CFC-11)	3,183,025	0.01	1 / 45
46	2893	Printing Ink	Toluene	2,723,477	0	1 / 79
47	3411	Metal Cans	Manganese	2,696,039	0	Zero
48	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Butyl acetate	2,666,367	0	1 / 79
49	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Ethyl acetate	2,588,827	0	1 / 61
50	2841	Soap And Other Detergents, Except Specialty Cleaners	Tetrachloroethylene	2,555,082	0	Zero
51	3711	Motor Vehicles And Passenger Car Bodies	Methanol	2,509,602	10.44	1 / 140
52	2891	Adhesives And Sealants	Ethyl acetate	2,432,684	0	1 / 11
53	2672	Coated And Laminated Paper, NEC	4,4'-Isopropylidenediphenol	2,363,986	0	Zero
54	2844	Perfumes, Cosmetics, And Other Toilet Preparations	Dibutyl phthalate	2,337,124	0	Zero
55	2891	Adhesives And Sealants	Dichloromethane	2,313,727	0	1 / 18
56	2891	Adhesives And Sealants	Methanol	2,258,615	0	1 / 13
57	2891	Adhesives And Sealants	Manganese compounds	2,243,833	0	1 / 21,000
58	2493	Reconstituted Wood Products	1,1-Dichloro-1-fluoroethane (HCFC-141b)	2,189,664	34.01	1 / 72
59	2893	Printing Ink	Glycol ethers	1,996,155	0	1 / 370
60	2844	Perfumes, Cosmetics, And Other Toilet Preparations	Dimethyl phthalate	1,957,116	0	Zero
61	3711	Motor Vehicles And Passenger Car Bodies	Cyclohexane	1,890,745	0	1 / 630,000

TABLE 3

CONTINUED

Rank	SIC Code	Industry Classification	Chemical	Amount of the Chemical Shipped As or in Product (pounds)	Percent of Total Shipped in Product Not Intended to Be in Product	Releases of Chemical per Pound of Intended Use in Product
62	3711	Motor Vehicles And Passenger Car Bodies	Benzene	1,890,533	0	1 / 28,000
63	3089	Plastics Products, NEC	Lead compounds	1,862,253	0	1 / 25,000
64	3089	Plastics Products, NEC	Chlorodifluoromethane (HCFC-22)	1,850,253	0	1 / 84
65	3021	Rubber And Plastics Footwear	Di(2-ethylhexyl) phthalate	1,803,643	0	Zero
66	2893	Printing Ink	Cyclohexanone	1,777,764	0	1 / 330
67	2269	Finishers Of Textiles, NEC	Trichloroethylene	1,771,000	100	Undefined
68	3944	Games, Toys, And Children's Vehicles, Except Dolls And Bicycles	Dibutyl phthalate	1,664,849	0	Zero
69	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	4,4'-Isopropylidenediphenol	1,626,773	0	1 / 81,000
70	2844	Perfumes, Cosmetics, And Other Toilet Preparations	Toluene	1,466,163	0	1 / 69
71	2891	Adhesives And Sealants	Caprolactum dust and vapor	1,405,373	0	1 / 1,900
72	2834	Pharmaceutical Preparations	Dibutyl phthalate	1,329,927	0	1 / 440,000
73	2844	Perfumes, Cosmetics, And Other Toilet Preparations	Ammonia	1,310,944	0	1 / 4,800
74	2891	Adhesives And Sealants	Vinyl acetate	1,276,185	0.03	1 / 540
75	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	N-Methyl-2-pyrrolidone	1,228,311	0	1 / 86
76	3711	Motor Vehicles And Passenger Car Bodies	Glycol ethers	1,197,515	21.74	1 / 23
77	3711	Motor Vehicles And Passenger Car Bodies	Ethylbenzene	1,138,939	32.59	1 / 10
78	3711	Motor Vehicles And Passenger Car Bodies	n-Hexane	1,134,811	0	1 / 28,000
79	2295	Coated Fabrics, Not Rubberized	Methyl ethyl ketone	1,132,329	96.29	9.6 / 1
80	2891	Adhesives And Sealants	Trichloroethylene	1,058,547	0	1 / 700
81	2891	Adhesives And Sealants	Ethylenediamine	999,749	0	1 / 2,100
82	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Styrene	986,820	2.15	1 / 200
83	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Methyl ethyl ketone	923,740	0	1 / 72
84	3086	Plastics Foam Products	Methanol	893,473	0	1 / 1,000
85	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Naphthalene	878,308	0	1 / 450
86	2891	Adhesives And Sealants	Ethylbenzene	850,598	0	1 / 680
87	3069	Fabricated Rubber Products, NEC	Ethylene thiourea	846,339	0	Zero
88	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Methyl methacrylate	784,202	46.95	1 / 89
89	2679	Converted Paper And Paperboard Products, NEC	Ethyl acetate	760,714	0	1 / 1.4
90	2891	Adhesives And Sealants	Cyclohexane	755,175	0	1 / 570
91	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Ammonia	750,694	8.26	1 / 210
92	2891	Adhesives And Sealants	Methyl acrylate	748,234	0	1 / 370
93	2891	Adhesives And Sealants	Furan, tetrahydro-	736,607	0	1 / 75
94	2891	Adhesives And Sealants	N-Methyl-2-pyrrolidone	735,904	0	1 / 180
95	2295	Coated Fabrics, Not Rubberized	Phenol	733,969	0	1 / 13
96	2891	Adhesives And Sealants	Dibutyl phthalate	731,074	0	1 / 1,100
97	2841	Soap And Other Detergents, Except Specialty Cleaners	Toluene	699,389	0	1 / 1,200
98	3949	Sporting And Athletic Goods, NEC	Styrene	693,212	0	1 / 210
99	3088	Plastics Plumbing Fixtures	Styrene	687,175	0	1 / 9.3
100	2833	Medicinal Chemicals And Botanical Products	Methanol	673,001	80.15	1.6 / 1
101	3944	Games, Toys, And Children's Vehicles, Except Dolls And Bicycles	Dimethyl phthalate	629,242	0	Zero
102	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Dichloromethane	606,891	0	1 / 870
103	2841	Soap And Other Detergents, Except Specialty Cleaners	Sodium phosphate, tribasic	606,869	0	1 / 11,000
104	3089	Plastics Products, NEC	Methyl methacrylate	600,100	100	Zero
105	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	n-Hexane	589,051	0	1 / 310
106	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Dibutyl phthalate	586,073	0	Zero
107	3711	Motor Vehicles And Passenger Car Bodies	Antimony	547,487	0	Zero
108	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Cumene	533,196	0	1 / 320
109	2893	Printing Ink	Methyl isobutyl ketone	532,327	0	1 / 93
110	2841	Soap And Other Detergents, Except Specialty Cleaners	Sodium dodecylbenzenesulfonate	523,418	0	1 / 75,000
111	2891	Adhesives And Sealants	1,1,1-Trichloroethane	522,555	0	1 / 63
112	3086	Plastics Foam Products	Chlorodifluoromethane (HCFC-22)	521,972	0	1 / 45
113	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Folpet	510,555	0	Zero
114	2672	Coated And Laminated Paper, NEC	Toluene	498,593	100	240,000 / 1
115	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	N,N-Dimethylformamide	496,488	0	1 / 940
116	2893	Printing Ink	Dichloromethane	478,909	0	1 / 240
117	3961	Costume Jewelry And Costume Novelties, Except Precious Metal	Lead compounds	467,596	0	Zero
118	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	p-Xylene	446,320	0	1 / 21
119	2087	Flavoring Extracts And Flavoring Syrups, NEC	Methanol	436,600	1.19	1 / 59
120	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Isophorone	424,879	0	1 / 52
121	2295	Coated Fabrics, Not Rubberized	Antimony trioxide	415,404	0	Zero
122	2834	Pharmaceutical Preparations	Formaldehyde	409,663	0	1 / 270

TABLE 3

CONTINUED

Rank	SIC Code	Industry Classification	Chemical	Amount of the Chemical Shipped As or in Product (pounds)	Percent of Total Shipped in Product Not Intended to Be in Product	Releases of Chemical per Pound of Intended Use in Product
123	2893	Printing Ink	Ethylene glycol	389,778	0	1 / 19,000
124	3089	Plastics Products, NEC	Styrene	389,013	0	1 / 20
125	3069	Fabricated Rubber Products, NEC	Toluene	379,018	100	Undefined
126	2834	Pharmaceutical Preparations	Dimethyl phthalate	370,748	0	1 / 370,000
127	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Tetrachloroethylene	362,984	0	Zero
128	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	1,1,1-Trichloroethane	356,485	0	1 / 130
129	2891	Adhesives And Sealants	Aluminum (fume or dust)	344,305	0	1 / 8,000
130	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Sodium dodecylbenzenesulfonate	338,438	0	Zero
131	2295	Coated Fabrics, Not Rubberized	Trichloroethylene	336,534	100	Undefined
132	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Trichloroethylene	335,102	0	1 / 370
133	3069	Fabricated Rubber Products, NEC	Thiram	332,535	0	Zero
134	2754	Commercial Printing, Gravure	Toluene	325,360	2.21	1 / 1.1
135	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	N-Methyl-2-pyrrolidone	321,562	0	1 / 46,000
136	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Sodium nitrite	311,550	0	Zero
137	3711	Motor Vehicles And Passenger Car Bodies	1,2,4-Trimethylbenzene	310,727	0	1 / 11
138	3711	Motor Vehicles And Passenger Car Bodies	Cyanide compounds	293,883	0	Zero
139	2295	Coated Fabrics, Not Rubberized	Methanol	286,524	0	1 / 1.7
140	2087	Flavoring Extracts And Flavoring Syrups, NEC	Glycol ethers	283,914	0	Zero
141	2844	Perfumes, Cosmetics, And Other Toilet Preparations	tert-Butyl alcohol	282,366	0	Zero
142	2013	Sausages And Other Prepared Meat Products	Sodium phosphate, tribasic	281,506	0	Zero
143	3069	Fabricated Rubber Products, NEC	2-Mercaptobenzothiazole	278,049	0	Zero
144	2893	Printing Ink	Xylene (mixed isomers)	277,948	0	1 / 270
145	2066	Chocolate And Cocoa Products	Formic acid	277,466	0	1 / 490
146	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Trichloroethylene	274,084	0	Zero
147	3262	Vitreous China Table And Kitchen Articles	Lead compounds	272,406	0	1 / 180
148	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Tributyltin methacrylate	272,330	0	Zero
149	2091	Canned And Cured Fish And Seafoods	Phenol	264,552	0	Zero
150	2672	Coated And Laminated Paper, NEC	Glycol ethers	258,717	0	1 / 39
151	2891	Adhesives And Sealants	Triethylamine	242,784	0	1 / 150
152	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Di(2-ethylhexyl) phthalate	240,851	0	Zero
153	2834	Pharmaceutical Preparations	Dichlorotetrafluoroethane (CFC-114)	234,899	0	1 / 13
154	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	1,1,1-Trichloroethane	230,850	0	1 / 150
155	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Cresol (mixed isomers)	220,539	0	1 / 4,500
156	3089	Plastics Products, NEC	Ethylene glycol	213,427	100	Undefined
157	3111	Leather Tanning And Finishing	Manganese	211,729	0	Zero
158	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Toluene	211,477	0	1 / 130
159	2891	Adhesives And Sealants	Toluenediisocyanate (mixed isomers)	208,107	43.03	Zero
160	3069	Fabricated Rubber Products, NEC	n-Hexane	194,000	100	Undefined
161	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	1,4-Dichlorobenzene	190,932	0	Zero
162	3089	Plastics Products, NEC	Lead	190,250	0	Zero
163	2621	Paper Mills	Formaldehyde	189,676	0	4.5 / 1
164	3111	Leather Tanning And Finishing	Glycol ethers	186,078	89.02	4.6 / 1
165	2893	Printing Ink	Ammonia	183,440	0	1 / 500
166	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Nickel compounds	181,137	0	Zero
167	3089	Plastics Products, NEC	Methanol	177,928	0	1 / 1.7
168	2841	Soap And Other Detergents, Except Specialty Cleaners	Sodium nitrite	177,800	0	Zero
169	2891	Adhesives And Sealants	Methyl isobutyl ketone	176,391	0	1 / 91
170	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Furan, tetrahydro-	173,293	0	1 / 59
171	3711	Motor Vehicles And Passenger Car Bodies	Sodium nitrite	168,316	37.56	1 / 110
172	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Formaldehyde	164,711	0	1 / 41,000
173	2621	Paper Mills	C.I. Direct Blue 218	163,237	0	Zero
174	2841	Soap And Other Detergents, Except Specialty Cleaners	Ethylene glycol	162,801	0	1 / 33,000
175	2295	Coated Fabrics, Not Rubberized	N-Methyl-2-pyrrolidone	155,825	0	Zero
176	3085	Plastics Bottles	Ammonia	155,659	0	1 / 3,100
177	2844	Perfumes, Cosmetics, And Other Toilet Preparations	p-Phenylenediamine	152,696	0	1 / 17,000
178	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Tetrachloroethylene	146,095	0	Zero
179	3711	Motor Vehicles And Passenger Car Bodies	Manganese compounds	143,839	0	Zero
180	2841	Soap And Other Detergents, Except Specialty Cleaners	N-Methyl-2-pyrrolidone	143,344	0	Zero
181	3965	Fasteners, Buttons, Needles, And Pins	Lead	142,922	0	1 / 13,000
182	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Triethylamine	141,818	0	1 / 41
183	2891	Adhesives And Sealants	Sodium nitrite	141,718	0	Zero

TABLE 3

CONTINUED

Rank	SIC Code	Industry Classification	Chemical	Amount of the Chemical Shipped As or in Product (pounds)	Percent of Total Shipped in Product Not Intended to Be in Product	Releases of Chemical per Pound of Intended Use in Product
184	2671	Packaging Paper And Plastics Film, Coated And Laminated	Methyl ethyl ketone	138,187	100	Undefined
185	2893	Printing Ink	1,2,4-Trimethylbenzene	134,697	0	1 / 340
186	2399	Fabricated Textile Products, NEC	Toluene	133,682	0	1 / 2.2
187	3089	Plastics Products, NEC	Antimony	133,015	0	Zero
188	2295	Coated Fabrics, Not Rubberized	Toluene	131,480	100	Undefined
189	2269	Finishers Of Textiles, NEC	Sodium nitrite	122,895	0	1 / 6.8
190	2679	Converted Paper And Paperboard Products, NEC	Methyl ethyl ketone	119,247	100	Undefined
191	2631	Paperboard Mills	Cupric sulfate	118,000	0	1.6 / 1
192	2295	Coated Fabrics, Not Rubberized	Di(2-ethylhexyl) phthalate	115,475	0	Zero
193	2621	Paper Mills	Nicotine and salts	106,695	0	Zero
194	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Nickel	104,935	0	1 / 2,100
195	2834	Pharmaceutical Preparations	Toluene	103,579	100	Undefined
196	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Diglycidyl resorcinol ether	98,996	0	Zero
197	3711	Motor Vehicles And Passenger Car Bodies	Nickel compounds	97,755	18.74	Zero
198	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Chlorothalonil	95,295	0	1 / 95,000
199	2841	Soap And Other Detergents, Except Specialty Cleaners	Diethanolamine	94,573	0	1 / 2,100
200	2891	Adhesives And Sealants	Hydroquinone	94,203	0	1 / 13,000
201	3996	Linoleum, Asphalted-felt-base, And Other Hard Surface Floor	Vinyl acetate	93,646	0	Zero
202	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Cyclohexanone	92,884	0	1 / 340
203	2253	Knit Outerwear Mills	Biphenyl	92,734	0	1 / 40
204	3944	Games, Toys, And Children's Vehicles, Except Dolls And Bicycles	tert-Butyl alcohol	91,334	0	Zero
205	2672	Coated And Laminated Paper, NEC	Di(2-ethylhexyl) phthalate	90,531	0	Zero
206	2754	Commercial Printing, Gravure	Lead compounds	90,101	0	Zero
207	2841	Soap And Other Detergents, Except Specialty Cleaners	1,1,1-Trichloroethane	87,200	0	1 / 170
208	2754	Commercial Printing, Gravure	N-Methyl-2-pyrrolidone	85,598	0	1 / 250
209	2754	Commercial Printing, Gravure	Ethyl acetate	84,674	0	4.6 / 1
210	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	2-Phenylphenol	82,401	0	1 / 3,300
211	2891	Adhesives And Sealants	o-Xylene	81,684	0	Zero
212	3952	Lead Pencils, Crayons, And Artists' Materials	Xylene (mixed isomers)	81,416	0	1 / 93
213	2621	Paper Mills	Ammonia	78,288	71.91	11 / 1
214	2295	Coated Fabrics, Not Rubberized	Xylene (mixed isomers)	77,708	89.86	12 / 1
215	3069	Fabricated Rubber Products, NEC	Methyl ethyl ketone	77,634	100	Undefined
216	2834	Pharmaceutical Preparations	Methanol	74,997	100	Undefined
217	2841	Soap And Other Detergents, Except Specialty Cleaners	2-Phenylphenol	74,017	0	Zero
218	2891	Adhesives And Sealants	Styrene	73,917	0	1 / 110
219	2891	Adhesives And Sealants	1,2,4-Trimethylbenzene	73,453	0	Zero
220	2253	Knit Outerwear Mills	Methanol	73,227	0	1 / 260
221	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Sodium nitrite	72,688	0	1 / 1,500
222	3952	Lead Pencils, Crayons, And Artists' Materials	Glycol ethers	71,790	0	Zero
223	2844	Perfumes, Cosmetics, And Other Toilet Preparations	Piperonyl butoxide	70,399	0	Zero
224	2491	Wood Preserving	Arsenic	69,979	0	1 / 14,000
225	2893	Printing Ink	Ethyl acetate	68,988	0	1 / 65
226	2671	Packaging Paper And Plastics Film, Coated And Laminated	Toluene	66,871	100	Undefined
227	2434	Wood Kitchen Cabinets	Styrene	66,400	0	Zero
228	2891	Adhesives And Sealants	Lithium carbonate	65,446	0	Zero
229	2295	Coated Fabrics, Not Rubberized	N,N-Dimethylformamide	65,382	50.82	12 / 1
230	3965	Fasteners, Buttons, Needles, And Pins	Nickel	65,346	0	Zero
231	3069	Fabricated Rubber Products, NEC	Di(2-ethylhexyl) phthalate	65,114	0	1 / 68
232	2087	Flavoring Extracts And Flavoring Syrups, NEC	Toluene	62,250	100	Undefined
233	2754	Commercial Printing, Gravure	Methyl ethyl ketone	62,196	12.14	6.4 / 1
234	2299	Textile Goods, NEC	Toluene	58,944	100	Undefined
235	3953	Marking Devices	Dichloromethane	58,828	0	1 / 26
236	2095	Roasted Coffee	Ammonia	58,564	100	Undefined
237	2893	Printing Ink	Lead compounds	58,161	0	1 / 7,300
238	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Cadmium compounds	56,100	0	Zero
239	3996	Linoleum, Asphalted-felt-base, And Other Hard Surface Floor	Methyl ethyl ketone	53,976	0	1 / 1.5
240	2893	Printing Ink	Di(2-ethylhexyl) phthalate	52,724	0	Zero
241	2834	Pharmaceutical Preparations	Dichloromethane	52,214	100	Undefined
242	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	1,1-Dichloro-1-fluoroethane (HCFC-141b)	51,300	0	Zero
243	2295	Coated Fabrics, Not Rubberized	Formaldehyde	48,562	0	1 / 390
244	2621	Paper Mills	Ethylene glycol	48,400	0	Zero

TABLE 3

CONTINUED

Rank	SIC Code	Industry Classification	Chemical	Amount of the Chemical Shipped As or in Product (pounds)	Percent of Total Shipped in Product Not Intended to Be in Product	Releases of Chemical per Pound of Intended Use in Product
245	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Antimony	48,179	0	Zero
246	2834	Pharmaceutical Preparations	Tetracycline hydrochloride	47,135	0	Zero
247	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Zineb	44,545	0	Zero
248	3220	Glass And Glassware, Pressed Or Blown	Lead	42,640	0	Zero
249	2834	Pharmaceutical Preparations	tert-Butyl alcohol	41,958	0	Zero
250	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Thiourea	41,447	0	1 / 8,300
251	2833	Medicinal Chemicals And Botanical Products	Toluene	41,313	100	Undefined
252	3069	Fabricated Rubber Products, NEC	Antimony trioxide	39,901	0	Zero
253	2891	Adhesives And Sealants	Ammonia	39,169	0	1 / 51
254	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Formic acid	38,919	0	Zero
255	2833	Medicinal Chemicals And Botanical Products	Hydrazine sulfate	38,769	0	1 / 39,000
256	3069	Fabricated Rubber Products, NEC	Dichloromethane	37,706	100	Undefined
257	2891	Adhesives And Sealants	Antimony trioxide	36,828	0	1 / 7,400
258	2672	Coated And Laminated Paper, NEC	Phenol	36,602	0	Zero
259	2841	Soap And Other Detergents, Except Specialty Cleaners	Formic acid	35,768	0	Zero
260	3111	Leather Tanning And Finishing	Ammonia	34,969	0	1 / 3.4
261	3220	Glass And Glassware, Pressed Or Blown	Cadmium	34,211	0	Zero
262	2833	Medicinal Chemicals And Botanical Products	Chlorine	33,360	100	Undefined
263	2891	Adhesives And Sealants	Glycol ethers	32,998	0	1 / 4.9
264	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Aluminum oxide (fibrous forms)	32,935	0	Zero
265	2891	Adhesives And Sealants	Aluminum oxide (fibrous forms)	31,404	0	Zero
266	2833	Medicinal Chemicals And Botanical Products	Ammonia	30,710	100	Undefined
267	2393	Textile Bags	Ammonia	29,963	100	Zero
268	2841	Soap And Other Detergents, Except Specialty Cleaners	Biphenyl	29,937	0	Zero
269	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Naphthalene	29,920	0	Zero
270	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Bis(tributyltin) oxide	29,088	0	Zero
271	3996	Linoleum, Asphalted-felt-base, And Other Hard Surface Floor	Arsenic Compounds	27,402	0	Zero
272	2653	Corrugated And Solid Fiber Boxes	Sodium azide	27,000	0	Zero
273	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Vinyl acetate	26,844	1.23	1 / 1.7
274	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Methanol	26,788	0	Zero
275	3951	Pens, Mechanical Pencils, And Parts	Cadmium compounds	25,260	0	Zero
276	2269	Finishers Of Textiles, NEC	Biphenyl	24,899	0	1 / 180
277	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Sodium phosphate, tribasic	24,740	0	1 / 2,500
278	2295	Coated Fabrics, Not Rubberized	Lead compounds	24,297	0	Zero
279	3951	Pens, Mechanical Pencils, And Parts	Xylene (mixed isomers)	24,210	0	Zero
280	2621	Paper Mills	Sodium nitrite	23,919	0	Zero
281	2399	Fabricated Textile Products, NEC	Methyl ethyl ketone	23,305	0	1 / 33
282	2679	Converted Paper And Paperboard Products, NEC	Lead compounds	22,322	0	Zero
283	2253	Knit Outerwear Mills	1,2,4-Trimethylbenzene	22,207	0	Zero
284	3111	Leather Tanning And Finishing	Triethylamine	21,126	100	Zero
285	2295	Coated Fabrics, Not Rubberized	Ethyl acetate	20,406	0	1.6 / 1
286	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Cresol (mixed isomers)	20,400	0	Zero
287	3953	Marking Devices	Xylene (mixed isomers)	20,060	0	Zero
288	2399	Fabricated Textile Products, NEC	n-Hexane	18,169	0	1 / 24
289	2399	Fabricated Textile Products, NEC	Dichloromethane	18,062	0	1 / 11
290	3711	Motor Vehicles And Passenger Car Bodies	Methyl ethyl ketone	17,546	0	1.1 / 1
291	2672	Coated And Laminated Paper, NEC	Xylene (mixed isomers)	17,184	100	Undefined
292	3952	Lead Pencils, Crayons, And Artists' Materials	Ethylene glycol	17,103	0	Zero
293	2253	Knit Outerwear Mills	Diethanolamine	17,078	0.56	1 / 120
294	2253	Knit Outerwear Mills	Formaldehyde	16,961	0.88	1 / 13
295	2295	Coated Fabrics, Not Rubberized	Methyl isobutyl ketone	16,179	100	Undefined
296	2295	Coated Fabrics, Not Rubberized	n-Hexane	15,956	100	Undefined
297	3089	Plastics Products, NEC	Silver nitrate	15,851	0	Zero
298	2891	Adhesives And Sealants	Nickel	14,500	0	1 / 910
299	2671	Packaging Paper And Plastics Film, Coated And Laminated	Ethyl acetate	13,925	0	19 / 1
300	2087	Flavoring Extracts And Flavoring Syrups, NEC	Ethylene glycol	13,893	0	Zero
301	2261	Finishers Of Broadwoven Fabrics Of Cotton	Sodium nitrite	12,870	100	Zero
302	2262	Finishers Of Broadwoven Fabrics Of Manmade Fiber And Silk	Ammonia	12,675	100	Undefined
303	3089	Plastics Products, NEC	n-Hexane	12,200	100	Undefined
304	2833	Medicinal Chemicals And Botanical Products	Manganese compounds	12,086	0	Zero
305	2672	Coated And Laminated Paper, NEC	Dibutyl phthalate	11,743	0	Zero

TABLE 3

CONTINUED

Rank	SIC Code	Industry Classification	Chemical	Amount of the Chemical Shipped As or in Product (pounds)	Percent of Total Shipped in Product Not Intended to Be in Product	Releases of Chemical per Pound of Intended Use in Product
306	2087	Flavoring Extracts And Flavoring Syrups, NEC	Acetaldehyde	11,714	0	1 / 330
307	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Formaldehyde	11,686	0	Zero
308	2841	Soap And Other Detergents, Except Specialty Cleaners	Naphthalene	10,922	0	Zero
309	3069	Fabricated Rubber Products, NEC	4,4'-Methylenebis(2-chloroaniline)	10,600	0	1 / 290
310	2841	Soap And Other Detergents, Except Specialty Cleaners	Triethylamine	10,513	0	Zero
311	2087	Flavoring Extracts And Flavoring Syrups, NEC	Cyclohexane	10,495	0	Zero
312	2754	Commercial Printing, Gravure	Dibutyl phthalate	9,692	0	Zero
313	2754	Commercial Printing, Gravure	Glycol ethers	9,051	100	Undefined
314	3711	Motor Vehicles And Passenger Car Bodies	Aluminum (fume or dust)	8,034	0	Zero
315	2621	Paper Mills	Sodium hypochlorite	7,877	0	1 / 150
316	2844	Perfumes, Cosmetics, And Other Toilet Preparations	Methyl ethyl ketone	7,534	0	Zero
317	2834	Pharmaceutical Preparations	Nitroglycerin	7,332	0	1 / 7,300
318	3089	Plastics Products, NEC	Cyclohexane	7,200	100	Undefined
319	3965	Fasteners, Buttons, Needles, And Pins	Toluene	6,800	0	Zero
320	3089	Plastics Products, NEC	Cadmium compounds	6,600	0	1 / 24
321	2833	Medicinal Chemicals And Botanical Products	Cobalt	6,584	100	Zero
322	2671	Packaging Paper And Plastics Film, Coated And Laminated	Xylene (mixed isomers)	6,104	100	Undefined
323	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	2-Methoxyethanol	6,096	0	1 / 1.5
324	2066	Chocolate And Cocoa Products	Propylene oxide	5,856	100	Undefined
325	2621	Paper Mills	Phenol	5,600	0	1.4 / 1
326	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Ethyl acrylate	5,569	100	Undefined
327	3996	Linoleum, Asphalted-felt-base, And Other Hard Surface Floor	Naphthalene	5,364	100	Undefined
328	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Xylene (mixed isomers)	5,071	0	Zero
329	2844	Perfumes, Cosmetics, And Other Toilet Preparations	o-Xylene	4,860	100	Zero
330	2295	Coated Fabrics, Not Rubberized	Ethylbenzene	4,840	100	Undefined
331	2672	Coated And Laminated Paper, NEC	Methyl ethyl ketone	4,693	100	Undefined
332	2842	Specialty Cleaning, Polishing, And Sanitation Preparations	Freon 113	4,500	0	1 / 45
333	2657	Folding Paperboard Boxes, Including Sanitary	Xylene (mixed isomers)	4,200	100	Undefined
334	2834	Pharmaceutical Preparations	Benzyl chloride	3,325	100	Undefined
335	2671	Packaging Paper And Plastics Film, Coated And Laminated	Methyl isobutyl ketone	2,556	100	Undefined
336	2834	Pharmaceutical Preparations	Methyl isobutyl ketone	1,862	100	Undefined
337	2759	Commercial Printing, NEC	Methyl isobutyl ketone	1,717	100	Undefined
338	2754	Commercial Printing, Gravure	Methyl isobutyl ketone	1,683	0	29 / 1
339	3069	Fabricated Rubber Products, NEC	Xylene (mixed isomers)	1,634	100	Undefined
340	3086	Plastics Foam Products	Toluenediisocyanate (mixed isomers)	1,590	0	1.7 / 1
341	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Manganese compounds	1,300	0	Zero
342	2759	Commercial Printing, NEC	Methyl ethyl ketone	1,070	100	Undefined
343	2269	Finishers Of Textiles, NEC	Diethanolamine	1,025	100	Zero
344	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Aluminum (fume or dust)	778	0	Zero
345	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	Acrylonitrile	706	87.54	9.9 / 1
346	3089	Plastics Products, NEC	Methyl isobutyl ketone	670	100	Undefined
347	2891	Adhesives And Sealants	N,N-Dimethylformamide	645	0	1.4 / 1
348	2833	Medicinal Chemicals And Botanical Products	Dimethyl sulfate	497	100	Undefined
349	3089	Plastics Products, NEC	Methyl ethyl ketone	478	100	Undefined
350	2754	Commercial Printing, Gravure	Furan, tetrahydro-	392	0	5.1 / 1
351	2269	Finishers Of Textiles, NEC	Formaldehyde	387	63.31	12 / 1
352	2269	Finishers Of Textiles, NEC	Glycol ethers	304	0	7.0 / 1
353	2295	Coated Fabrics, Not Rubberized	Toluene-2,4-diisocyanate	246	0	Zero
354	2754	Commercial Printing, Gravure	Ethylene glycol	205	100	Undefined
355	3089	Plastics Products, NEC	Toluene	200	100	Undefined
356	2672	Coated And Laminated Paper, NEC	Methanol	140	100	Undefined
357	2672	Coated And Laminated Paper, NEC	Ethylbenzene	124	100	Undefined
358	2672	Coated And Laminated Paper, NEC	Vinyl acetate	74	100	Undefined
359	2891	Adhesives And Sealants	Formaldehyde	27	100	Undefined
360	2676	Sanitary Paper Products	Polychlorinated biphenyls (PCBs)	18	100	Zero
361	2891	Adhesives And Sealants	2-Methoxyethanol	17	0	13 / 1
362	2851	Paints, Varnishes, Lacquers, Enamels, And Allied Products	N-Methylolacrylamide	8	0	1 / 8.0
363	2676	Sanitary Paper Products	Dioxin and Dioxin-like Compounds	3	107.65	Zero
364	2295	Coated Fabrics, Not Rubberized	Arsenic Compounds	1	0	Zero

Total for all records

1,062,264,637

1.8

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Appendix II: Methodology

Data Sources

This report uses data from a number of sources, all current as of December 2002:

- Data on toxic chemicals from certain facilities in Massachusetts were taken from Toxic Use Reports filed under the Massachusetts Toxic Use Reduction Act (TURA). Data for 1995-2000 were obtained on a CD-ROM disc provided by Massachusetts' Department of Environmental Protection, TURA program. Facilities report these data if they are within certain industries, have more than 10 full-time employees, and use certain toxic chemicals above listed thresholds. The reporting requirements follow those of the federal Toxic Release Inventory (TRI), except that beginning in 1995, Massachusetts required certain non-manufacturing industries to report data, and it also requires chemicals on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) list to be reported. Massachusetts has also de-listed a few chemicals from TURA reporting that are found on the TRI and CERCLA lists. Reporting criteria for TURA can be found at <www.state.ma.us/dep/bwp/dhm/tura/turapubs.htm>.
- Similar data for some facilities in New Jersey were taken from Release and Pollution Prevention Reports (RPPR) filed under the authority of the New Jersey Worker and Community Right-to-Know Act. Data for 1996-1997 were obtained from the New Jersey Department of Environmental Protection (DEP) website, <<http://www.state.nj.us/dep/enforcement/relprev/crtk/index.html>>; data for 1998-2000 were sent electronically by New Jersey DEP in October 2002. Data for 1995 were obtained from Hampshire Research, a consulting firm which had done additional data quality work for a previous report using these data. Facilities complete RPPR reports only if they also report federal Toxic Release Inventory (TRI) forms; therefore the data are limited to certain industries, to facilities with more than 10 full-time employees, and those that use certain toxic chemicals above thresholds. Reporting criteria for TRI/RPPR can be found at <www.epa.gov/tri/>.
- Lists of reproductive and developmental toxins, and of carcinogens, were taken from the California Proposition 65 list, <www.oehha.ca.gov/prop65.html>, updated in June 2002.
- A list of known and suspected neurotoxins was obtained from the "Scorecard" website maintained by Environmental Defense, <www.scorecard.org>, updated September 2002.
- Some facilities in the Massachusetts and New Jersey databases had missing SIC code (industrial classification) information; in addition, the Massachusetts database does not collect TRI-style manufacturing, processing, and use codes which were used in this report's analysis. These data were obtained

from the federal TRI in cases where a facility was missing information but could be linked to its record within TRI. TRI data were taken from a copy used by the Right-to-Know Network, RTK NET, <www.rtk.net>.

Chemicals were listed in this report if they were reported to the New Jersey or Massachusetts databases (i.e., if they were on the TRI or CERCLA chemical lists) and if they appeared on the Proposition 65 list of carcinogens, the Proposition 65 list of reproductive or developmental toxins, or the Scorecard list of suspected neurotoxins. A few chemicals were eliminated because they have been de-listed from the federal TRI. The final chemical list used in this report can be found in Appendix I, Table 1.

Industries That Produce Products Likely to be Found in the Home

Only certain industries are included in this report. Specific industries that make products likely to be found in or around the home were selected from the list of those reported by the two databases. In general, these were foods and household consumer products, although certain other industries (such as car bodies) were added to fully reflect the range of potentially toxic chemicals used in and around the home. Some industries manufacture both consumer and industrial products, and in these cases an ad hoc decision was made to include or exclude the entire industry.

The final list of industries used can be seen in Appendix I, Table 2, along with some sample products produced by each industry. No effort was made to verify that the particular facilities that reported within these industries actually made products that match the sample products listed. The industry was classified based on its primary Standard Industrial Classification (SIC) code as shown on its New Jersey or Massachusetts reporting form. Records with blank SIC codes used SIC information from TRI if a link between the two could be made. Some facilities reported SIC codes that were valid under the 1977 rather than the standard 1987 SIC list; these were converted to the more recent code numbers when possible. Some facilities reported more than one SIC code per form: in these cases the first SIC code was taken to be the primary one as described in reporting instructions.

Although petroleum refineries were not included in this report, those in New Jersey shipped over 100 billion pounds of neurotoxins, carcinogens, and reproductive or developmental toxins in products between 1995 and 2000. While these data dwarf all the other industries profiled in this report, it is unclear how much of the product produced from these facilities was gasoline and how much was industrial lubricants. More perplexing was how much of the chemicals of interest were in each type of product. Even if the amount that was gasoline could be determined, it would be difficult to project the amount of gasoline that would have gone into passenger cars and light trucks versus heavy trucks.

Data on Releases, Amounts Shipped As or in Products, and Chemical Use

Amounts of toxic chemicals listed in this report consist of releases, amounts reported as shipped as or in products, and total use amounts. Releases are totals of amounts reported released to air, water, land, or underground on-site at each facility; these are reported in similar fashion in the Massachusetts and New Jersey databases, both of which have TRI-style reporting. Amounts of toxic chemicals going into products are reported as simple data fields within both databases. Calculating the total amount of toxic chemical use is somewhat more complicated because these data are reported differently within the two databases, and because it is constructed from other quantities.

- For New Jersey, the amount of chemical used was calculated as the amount in inventory at the start of the year minus the amount in inventory at the end of the year, plus the amount produced, plus the amount brought on-site, plus the amount recycled on-site.
- For Massachusetts, the amount of chemical used was calculated as the sum of the amounts manufactured, processed, and otherwise used.

In cases where the calculated usage amount was less than the total amount released, transferred off-site, and going into products, the usage amount was adjusted upwards to equal this total. For the data used within this report, this resulted in a total upward adjustment of 4.2 million pounds (for a total of 560 million pounds) of chemical use in Massachusetts and 31 million pounds (to make a total of 1.5 billion pounds) for New Jersey. All amounts in this report are in pounds, except for quantities of dioxin and dioxin-like compounds which are reported in grams.

Chemicals Shipped As or in Products That Are Not Intended to Be in Products

For some data analyses, amounts in products were separated into amounts intended to be in the products (because the chemical is part of the product formulation) and amounts left in the products as contaminants or remnants of the production process. This second category was referred to as “amounts not intended in product.” Categorization was done using the manufacturing, processing, and other use codes used in the TRI and the New Jersey database. Facilities in Massachusetts had these codes taken from TRI in cases where a link to a TRI report for the facility could be established. The codes were evaluated as follows:

- If the facility indicated that the chemical was manufactured for sale or distribution, or processed as a formulation component, an article component, or for repackaging, this indicated that some of the chemical was an intended element of the product;

- If the facility indicated that the chemical was manufactured as a by-product or an impurity, processed as a reactant or process impurity, or otherwise used as a chemical processing aid, manufacturing aid, or for ancillary use, this indicated that some of the chemical was not an intended element of the product;
- If the form had codes indicating that some of a chemical was intended to be in the product and codes showing that some was not, it was impossible to tell how much was intended for the product. In these cases, which account for approximately 25 percent of chemical use, all of the chemical was counted as intended for the product. Only the chemicals with codes showing that they were “not intended in the product” were listed in the “not intended” category.

It is also possible that some of these unintended amounts shipped as or in products are the result of incorrect reporting by manufacturers. There are two plausible explanations for this. The first is that the amount reported is simply an error. The second is more complicated. Materials accounting programs such as those in New Jersey and Massachusetts have an inherent bias that the chemical inputs and outputs should balance. In other words, the amount of a substance brought on site, plus the amount produced on site, should equal the amount of the substance consumed in processing, added to the amounts shipped as or in product, and the amount generated as waste (including amounts managed as waste on site, released to the environment on site, and shipped off site for management or disposal). Obviously, whether or not the totals balance depends on how each quantity is estimated. In some cases when the inputs and outputs do not balance, facilities may put the “extra” inputs into the shipped as or in product category, particularly when the quantities needed for balance are small.

Another slight discrepancy is that some industries and chemicals will be underrepresented in this report in comparison to others because the reporting criteria have changed from year to year. Quantities in this report are totals of those reported from 1995 through 2000. Changes in reporting requirements will cause totals for chemicals reported in all six years to appear larger than those only reported for one or two years. For instance, certain chemicals, such as dioxin, were either added to the requirements or had their threshold lowered in 2000 when EPA included Persistent Bioaccumulative Toxics in the TRI. Some of these chemicals will therefore have only one year of data included. (Another major change to TRI in 1998—the addition of non-manufacturing industries—does not affect this report, because those industries were not included in the list of ones likely to cause household exposure.) Similarly, some chemicals will be underrepresented in the totals because they were reported either to the Massachusetts or the New Jersey database, but not to both. This includes some CERCLA chemicals, such as sodium phosphate (tribasic), ethyl acetate, sodium hypochlorite, and butyl acetate.

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