

THE ENVIRONMENT

WHO SCORES BEST ON THE ENVIRONMENT


What companies are in the vanguard of the green revolution—and which are lagging behind? FORTUNE ranking names names and shows what you can learn from the leaders. ■ by Faye Ric

WHEN AMERICANS first demanded a cleanup of the environment during the early 1970s, corporations threw a tantrum. Their response ran the psychological gamut from denial to hostility, defiance, obstinacy, and fear. But today, when it comes to green issues, many U.S. companies have turned from rebellious underachievers to active problem solvers.

Who's in the vanguard of this revolution—and who's lagging behind? Most important, what can consumers, investors, and plain old earthlings learn from how the corporate leaders approach and tackle their environmental challenges?

To find out, FORTUNE spent three months examining the environmental records of America's biggest manufacturers—public and private companies with annual sales of \$400 million or more. (Yes, service companies pollute too, but we limited our survey to manufacturers because the government collects most of its data on them.) To measure relative ranking, we scored companies from zero (worst) to ten (best) in 20 different performance categories. These included things like the percentage reductions a company achieved in emissions of toxic chemicals as well as the comprehensiveness of its written environmental

THE 10 LEADERS



AT&T
Apple Computer
Church & Dwight
Clorox
Digital Equipment
Dow Chemical
H.B. Fuller
IBM
Herman Miller
Xerox

policies, goals, and employee incentives. We supplemented this green index, which concentrated on the period from 1987 to spring 1993, with interviews at more than 100 companies, plus scores of discussions with government officials, environmental groups, and other experts (for more, see methodology box).

The results are displayed in the three boxes on this page. (A more extensive scorecard follows this article.) Because FORTUNE chose to highlight only the leaders, the laggards, and the most improved companies, a number of the household names we examined—companies like Procter & Gamble, General Motors, and Ford—do not appear on our lists. Even so, among the blue chips that did make our cut, there are a host of surprises.

Start with this one. Dow Chemical, a company whose name was once synonymous with napalm, Agent Orange, and fearsome opposition to what former chairman Paul Oreffice called "nitpicking, ridiculous regulations," is now among America's top ten environmental champions. Four times a year, eight environmental advocates from around the world gather at the company's Midland, Michigan, headquarters and spend 1½ days with senior managers and board members. "This is

something environmentalists have been asking for—the ear of top management, says Anthony Cortese, former dean of environmental programs at Tufts University and one of the members of Dow's Environmental Advisory Council. So far, however, Dow is the only major U.S. corporation that regularly lends its ear to such a high level group.

At the plant level, Dow managers increasingly carry on this same kind of consultation with local environmental groups. They have an incentive to do so: Their salaries and bonuses are pegged to, among other things, how well environmental goals are met. Last year Dow added an environmental category to every employee's job appraisal form. Dow also recently put David T. Buzzelli, its senior environmental officer, on its board of directors. No other company contacted for this story has gone that far. Says Joanna Underwood, who runs Inform, an environmental research group, and is also a member of Dow's advisory council: "The message from Dow is that the environment is not a side business but an essential part of business."


In 1986, Dow launched its WRAP (Waste Reduction Always Pays) program and quickly began proving that acronym true. At a latex plant in Midland, for exam-

THE 10 MOST IMPROVED



Ciba-Geigy
Hewlett-Packard
Johnson & Johnson
S.C. Johnson & Son
Minn. Mining & Mfg.
Nalco Chemical
Polaroid
Shell Oil
Sun
Union Camp

THE 10 LAGGARDS



American Cyanamid
Boeing
BP America
E.I. Du Pont de Nemours
General Electric
International Paper
Louisiana-Pacific
Maxxam
Monsanto
USX

ple, teams of workers and supervisors made a few simple changes in pipes and production equipment and improved housekeeping techniques—like making sure valves were shut. Result: They eliminated 60% of the waste that had been going to landfills, saving \$310,000 in annual fees. More efficient latex production—another benefit from those changes—saved an additional \$420,000 a year. Since WRAP was unwrapped, some 200 teams have discovered similar savings throughout the company.

ONE OF THE FORCES propelling corporate America's cleanup drive has been the so-called Toxic Release Inventory (TRI). Since 1986 the EPA has required that all the plants of some 10,000 U.S. manufacturers report the annual releases from their facilities into the air, ground, and water of 317 toxic chemicals (such as asbestos, freon, and PCBs) and 20 toxic chemical categories (lead compounds, for example). Some 200 chemicals will be added to the list over the next few years. None of these releases, which are tallied by the companies themselves, necessarily violates any U.S. regulation, though other laws—the Clean Air Act, for example—may put restrictions on the same emissions. The main idea behind TRI is to provide the public with an annual environmental benchmark. As William K. Reilly, former administrator of the EPA, notes, "TRI has been a powerful tool for reducing emissions."

Dow's TRI releases per dollar of sales—a common measure used by environmental groups to avoid penalizing large companies—are now among the lowest in the U.S. chemical industry. The primary reason is that Dow wisely phased out the practice of injecting hazardous waste underground before the tally began. Meanwhile, competitor and industry sales leader Du Pont has yet to abandon underground injection. Since 1987, Du Pont's TRI releases have increased three out of five years; Dow's emissions have fallen 32% since 1988.

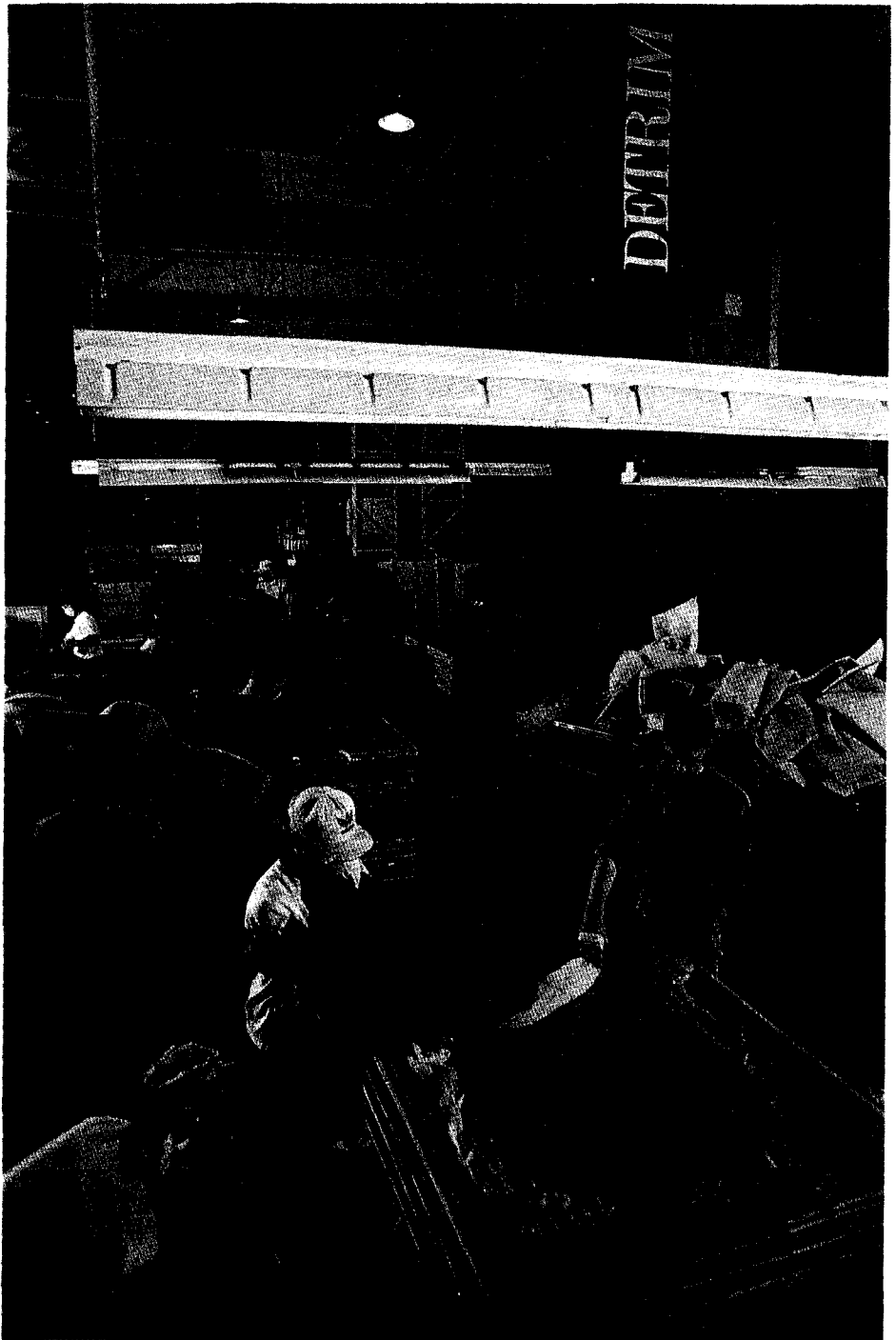
Dow's overseas goals are also aggressive. In 1991 the EPA asked U.S. companies to sign up for a voluntary campaign to reduce their use of 17 chemicals to 33% by 1992 and 50% by 1995, with 1988 as the base year. When Dow joined the so-called 33-50 program in 1991, its foreign businesses also took on the same goals—and even went further. Dow Europe, for example, has targeted 60 chemicals as well as the 17 on the 33-50 list.

During the past 20 years, furniture maker Herman Miller has found a way to recycle or reuse nearly all the waste left over from the manufacturing process: Fabric scraps are sold to the auto industry to reuse as lining for cars; luggage makers buy Miller's leather trim for attaché cases; stereo and auto manufacturers use vinyl for

sound-deadening material. Headquarters is powered by a cogeneration facility that turns wood scraps into energy and shaves \$450,000 off the gas bill. Miller even has a thriving secondhand furniture business, which buys back its old furniture and refurbishes and resells it.

That's how the company reduced solid

Herman Miller buys old office panels—otherwise bound for landfills—and remakes them to sell again.



MICHAEL L. ABRAMSON

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waste 80% since 1982. How about the other 20%? Herman Miller has hired an outside consulting firm to help it meet the corporate-wide goal of zero waste to landfills by 1995. Says environmental manager Paul Murray: "There is never an acceptable level of waste at Miller. There are always new things we can learn."

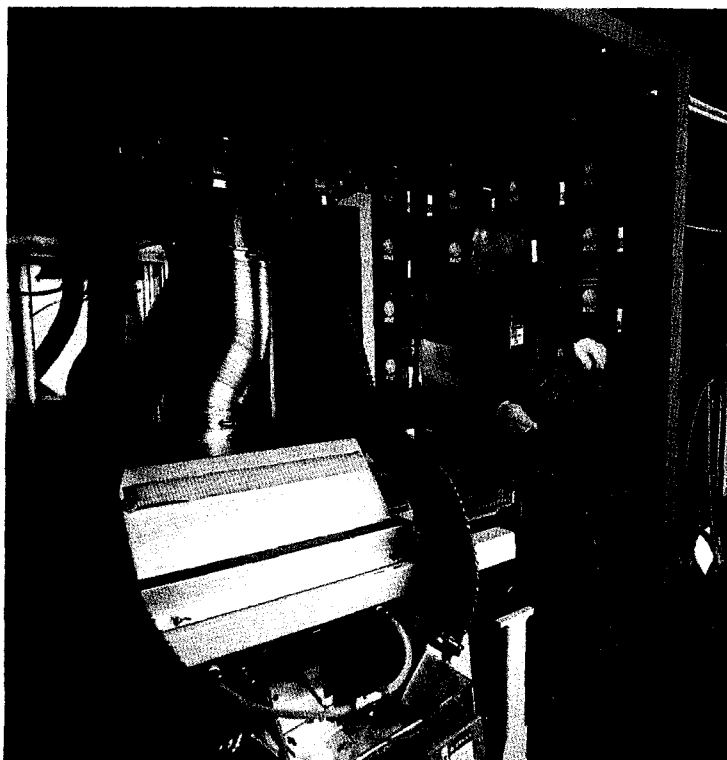
To its credit, IBM has kept aggressive environmental goals front and center despite a terrifying slide in profits, stock value, and reputation. Tops on its hit list are ozone-depleting chlorofluorocarbons (CFCs), widely used in the computer industry as solvents and cleaning agents. In 1989, when the deadline for eliminating CFCs was the year 2000 (it's now 1995), the computer giant set a worldwide goal to phase them out by the end of 1993. IBM invented various replacement technologies for the ozone depleters, such as water-based solvents. By year-end 1992, the company's CFC use had plunged 83%.

Big Blue was also one of the first major corporations to embrace industry's four-tiered approach to waste: reduce, reuse, recycle, and landfill as a last resort, which shifts the focus to generating less waste in the first place. Here's what has happened to hazardous waste at IBM from 1987 to 1991: 44% less is generated, and 72% of what is produced is recycled on-site.

"You know a company is aggressively trying to reduce waste when it has strong employee reward programs," says Inform's Underwood. Every year IBM recognizes employees for technical innovations that help the company meet its environmental goals. Among the 16 winners last year was an employee in Boca Raton, Florida, who developed an energy-efficient personal computer. His prize: \$50,000.

This award-winning project demonstrates IBM's commitment to the EPA's year-old Energy Star program, which proposes to cut the energy consumption of personal computers 50% to 75%. IBM and competitors like Apple have agreed to design and manufacture at least one personal computer by 1993 that will meet this goal.

REPORTER ASSOCIATE *Jacqueline M. Graves*



Ozone-friendly technology cleans circuitboards at a Massachusetts AT&T plant.

The EPA estimates that converting two-thirds of all PCs to meet Energy Star standards will save 26 billion kilowatts annually by the year 2000, equivalent to the electricity consumed each year by Vermont, Maine, and New Hampshire combined.

AMERICAN Telephone & Telegraph is also steering an impressive environmental course. In 1990 the telecommunications giant established goals for reducing air emissions, CFCs, solid waste, and hazardous waste. Under the direction of David R. Chittick, AT&T's vice president of environment and safety, the company had either surpassed its goals or was ahead of schedule for meeting them by the end of last year. To engineer ozone-depleting emissions out of its operations, for instance, AT&T invested \$25 million to develop an array of alternative technologies. One, called Low Solids Spray Fluxer, eliminates the need for CFC solvents that clean the excess flux from electronic circuitboards. Now AT&T is selling this technology to some 25 other companies, among them IBM.

Sometimes AT&T gives its ideas away. Last year engineers developed an alternative for 1,1,1-trichloroethane, another

ozone-depleting solvent used to clean circuitboards. The company refers to the discovery as the "cantaloupe" technology because it contains a synthetic extract that appears naturally in that melon as well as other fruit. AT&T is sharing cantaloupe, which has helped reduce its 1,1,1 emissions to practically zero, with competitors for free.

In fact, AT&T managed to eliminate virtually all its ozone-depleting substances by May 15, 1993, a year and a half before the company's goal, and 2½ years ahead of the worldwide ban. Now AT&T doesn't have to worry about the new law that requires companies to put warning labels on all goods that contain or are manufactured with ozone-depleting substances. The company figures that the cost of tracking and labeling all the tiny components and switching systems

that it once manufactured with CFCs would add up to hundreds of thousands of dollars. The early phase-out also saves AT&T \$25 million annually in supply costs, since taxes on CFCs have helped send the price rocketing from about 80 cents per pound in 1986 to over \$11; the substitutes average 50 cents per pound.

AT&T has embraced Total Quality Management (TQM) principles to solve the most universal office pollution problem: too much paper. First, the company established a corporate paper reduction goal of 15% by 1995; then it created a corporate TQM team to figure out how to meet it. Following classic TQM techniques, the team identified AT&T's heaviest paper users, euphemistically called fat rabbits. The fat rabbits in turn formed TQM teams to help meet the company-wide goal. The internal information management unit, fat bunny No. 2 behind copying centers, gobbled up about a quarter of AT&T's total paper use for such things as marketing and financial reports. The department's TQM teams suggested such simple ways to decrease paper consumption as eliminating cover pages and using electronic rather than printed media. Within a year the department was consuming 22% less paper.

The long-distance division compressed the

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spacing on some 12 million bills to major customers of its Pro Wats and CustomNet lines. The result: three million fewer sheets of paper per year and lower postal rates for a total saving of some \$4 million annually.

Sun Co., parent of Sunoco, leaps onto the most improved list for being the first major company to sign the Coalition for Environmentally Responsible Economies (Ceres) principles. This corporate code of conduct on the environment was formulated in 1989 by a coalition of environmental and investor groups, including the National Wildlife Federation and the California Public Employees' Retirement System (Calpers). The code begins with the belief that "corporations must not compromise the ability of future generations to sustain themselves" and goes on to say that the signatories will "update our practices constantly in light of advances in technology . . . and environmental science." Among the ten Ceres principles: protection of the biosphere, sustainable use of natural resources, environmental restoration, and management commitment to sound environmental policy. Sun completes an annual Ceres report, which the organization summarizes for the public.

Companies like Du Pont, ARCO, and General Electric have vehemently resisted shareholder resolutions to adopt the principles. "After the resolution failed at our annual meeting last year, I stuck with the Ceres people and let them know we wanted to sign up," says Sun CEO Robert H. Campbell. The major obstacle was the wording of certain principles that, says Campbell, "gave our lawyers headaches." He fixed the problem by leaving the lawyers at home when he and his negotiating team hammered out a redraft of the original principles with slightly different wording.

Sun's TRI releases, the toxic emissions compiled annually by the EPA, are among the lowest in the petroleum industry, and Sunoco gas stations were the first outside California to install pumps for methanol, which produces lower levels of smog-forming compounds than regular gasoline. Still, Sun needs to work harder to develop solid waste reduction and recycling programs.

The computer industry led all others for having the most companies on the best and most improved lists. In the battle for the bottom, more companies from the oil and paper industries were in contention for the laggards list than from any other industry. Several aerospace companies just missed being named to the laggards list, but

Boeing made it. Why? The company's written environmental policy is as weak as camomile tea and only two sentences long.

In 1988, Boeing signed up for the EPA's 33-50 program. Though this is one of the few numerical goals the aerospace company has committed to, its releases of the targeted chemicals have so far not achieved 1992 goals. Boeing's TRI emissions since 1987 have also been heading north.

DU PONT and Monsanto have comprehensive environmental principles and are working to meet aggressive goals. Both chemical companies have CEOs who are committed to environmental achievement and publish annual reports that detail progress as well as setbacks. So how did Monsanto and Du Pont wind up on the laggards list? The chemical giants could be compared to an old car that sits unused for years. Even when tires and other new parts are added, it still fails to keep pace with new models.

Du Pont sat on the opposite side of the environmental debate for years, its performance defined more by adroit lobbying efforts to kill legislation than by innovative approaches to pollution prevention. For example, Du Pont successfully delayed the phase-out of CFCs for 15 years because it was the world's largest producer of the ozone destroyers. As the inevitable dead-

line approached, the company stepped up its promotion of substitute HCFCs, which are less potent but still ozone depleting, instead of developing alternatives that do not harm the environment.

On the toxic release front, Du Pont dawdled during the 1970s and 1980s while other companies acted. But when the first TRI report hit the street in 1988, revealing Du Pont and Monsanto as the country's largest polluters, these two got religion. Still, their efforts have not been enough to offset the massive amount of toxic chemicals they release. In 1991, Du Pont emitted 254 million pounds of poisonous junk. As Jack Doyle, senior analyst at the nonprofit environmental group Friends of the Earth, says, "That is more than twice as much as the combined releases of Dow, BASF, Ciba-Geigy, Union Carbide, and Hoechst chemical companies."

Corporate America is finally making progress in solving the nation's pollution problems, but there is still a long way to go. A report on TRI numbers by the research group Citizens Fund notes that the chief executives of the 50 companies emitting the most pollutants live in zip codes where releases of toxic chemicals are either zero or a fraction of those in areas where their plants are located. Until CEOs no longer fear setting up residence in the same zip codes as their plants, pollution prevention should remain at the top of corporate America's agenda. **F**

HOW THE SCORECARDS WERE DONE

FORTUNE evaluated 130 of America's largest manufacturing companies before selecting the 30 featured in the three scorecards that follow. To determine ranking, we assigned values that range from zero (worst) to ten (best) to performance in 20 key areas. Not all carried equal weight, though. Among the categories given the most importance were the amount of a company's toxic chemical releases, adjusted for sales, and its percentage reduction of those releases; the comprehensiveness of a company's environmental program (whether it has a written policy and goals, for example, or offers employee incentives); violations of environmental laws that carry large fines and penalties; and ratings by credible environmental groups.

Other important categories, carrying slightly less weight, include whether a company is potentially responsible for cleaning up an inordinately large number of Superfund sites; whether it reuses and recycles hazardous and solid waste; and whether it

participates in EPA's voluntary programs, such as 33-50 (so-called because it aims to reduce releases of 17 targeted chemicals 33% by 1992 and 50% by 1995 from a 1988 baseline).

The main data source was the reams of information gathered by the U.S. government, particularly the EPA and the Occupational Safety and Health Administration (OSHA). Also helpful were the small but growing number of investment firms that analyze environmental performance, such as Franklin's Research and Development of Boston and Covenant Investment Management of Chicago. A major source of information was the Council on Economic Priorities (CEP), a respected New York City environmental group headed by Alice Tepper Marlin. CEP's corporate reports, supervised by senior researcher Kenneth P. Scott, are often used as references by the companies themselves. Most important, we attempted to interview, in person or by phone, all 130 companies surveyed. Only a handful refused to cooperate.

ENVIRONMENTAL SCORECARD THE 10 LEADERS

AT&T New York

INDUSTRY
Telecommunications

SALES
\$65.1 billion

PROFITS
\$3.8 billion

Has won 18 environmental awards since 1990. In past five years lowered air emissions 81% and cut disposal of manufactured waste in half. Also reduced releases of CFCs by 86% since 1986. Recycles 60% of office paper and uses 10% less of it by double-sided copying and switching to electronic memos. Offers financial incentives to employees who devise ways to improve environmental performance. Produces a detailed annual environmental report.

APPLE COMPUTER Cupertino, California

INDUSTRY
Computers

SALES
\$7.1 billion

PROFITS
\$530 million

Developed a technology that eliminates the need for CFC-based solvents to clean circuitboards; reduced toxic emissions 97% from 1988 to 1992 and is expected to report zero emissions for 1993; working with suppliers to end their use of CFCs. Switched from white bleached packaging boxes to more environmentally friendly brown ones. Its new Macintosh Color Classic has a "sleep" mode that lowers energy consumption up to 50%.

CHURCH & DWIGHT Princeton, New Jersey

INDUSTRY
Cosmetics and soaps

SALES
\$516 million

PROFITS
\$30 million

This maker of Arm & Hammer baking soda has a long history of environmental concern. It has used recycled packaging since 1907 and made the first phosphate-free laundry detergent in 1970. Today it markets technologies that use baking soda to treat lead in drinking water, neutralize emissions that contribute to acid rain, and clean electronic circuitboards without CFCs. It cut its already low releases of toxic chemicals 45% from 1989 to 1992.

CLOROX Oakland

INDUSTRY
Cosmetics and soaps

SALES
\$1.7 billion

PROFITS
\$99 million

Reduced its toxic releases to just 519 pounds in 1991, the lowest of the majors in the cosmetics and soap industry; maintains an award-winning chlorine-handling system and has just adopted a new technology with even fewer environmental liabilities. Produces an extensive annual environmental report. Eliminated 8.2 million pounds of virgin material from packaging between 1991 and 1992 mainly by using recycled alternatives.

DIGITAL EQUIPMENT Maynard, Massachusetts

INDUSTRY
Computers

SALES
\$14.0 billion

PROFITS
(\$2.8 billion)

Eliminated use of CFCs well before international deadline; developed an alternative to CFCs for cleaning electronic circuitboards; working with suppliers to end their CFC dependency. Reduced toxic releases of chemicals 55% and EPA's priority chemicals 64% from 1988 to 1991; developed innovative ways to reduce manufactured waste. Takes back products to recycle or remanufacture—less than 1% of this reclaimed material ends up in U.S. landfills.

DOW CHEMICAL Midland, Michigan

INDUSTRY
Chemicals

SALES
\$19.1 billion

PROFITS
(\$489 million)

Toxic releases from America's second-largest chemical company, cut 32% between 1988 and 1991, are among the lowest in the industry. Is one of first companies to put its top environmental officer on the board; the first major corporation to organize an advisory council of outside environmentalists to help set environmental policy. Its WRAP (Waste Reduction Always Pays) program has cut millions of pounds of hazardous and solid waste and emissions since 1986.

H.B. FULLER St. Paul

INDUSTRY
Chemicals

SALES
\$934 million

PROFITS
\$36 million

This specialty chemical company lowered releases of toxic chemicals 53% from 1989 to 1991 and chemicals targeted in the EPA's voluntary reduction program 67% from 1988 to 1991. It totally eliminated packaging for its Zeromelt brand adhesive and nearly eliminated global use of underground storage tanks despite lack of international regulations requiring it to do so. Reuses as much production waste as possible in manufacturing adhesives and other products.

IBM Armonk, New York

INDUSTRY
Computers

SALES
\$65.1 billion

PROFITS
(\$5.0 billion)

Once a big user of CFCs, it made plans in 1989 to phase them out by 1993, long before the international deadline. Decreased releases of toxic chemicals 66% and production of hazardous waste 44% from 1987 to 1991; publishes a comprehensive environmental annual report. Now recycles 86% of hazardous waste and 61% of solid waste (paper, glass, plastic) worldwide. Its latest PCs are made with less plastic and built to make recycling easier.

HERMAN MILLER Zeeland, Michigan

INDUSTRY
Furniture

SALES
\$810 million

PROFITS
(\$14 million)

This furniture maker uses tropical wood only from well-managed, sustainable forests; innovative manufacturing methods have reduced solid waste 80% since 1982. Production scraps—fabric, foam, leather, plastic, vinyl—are resold to auto, leather, and carpet makers; a cogeneration facility uses leftover wood to heat corporate headquarters; a subsidiary buys back used furniture for remanufacture. Already low toxic releases reduced 24% from 1988 to 1990.

XEROX Stamford, Connecticut

INDUSTRY
Office equipment

SALES
\$18.1 billion

PROFITS
(\$1.0 billion)

Eliminated CFCs and reduced chemicals targeted in the EPA's voluntary reduction program well before their deadlines. Recycled over 50% of waste in 1991; reduced 73% of hazardous waste from 1984 to 1991. Designed such green features into its machines as double-sided copying, automatic energy-saving modes, and recyclable copy cartridges. Remanufactures one million unserviceable parts each year. Reliance on reusable packaging saves 10,000 tons of waste annually.

ENVIRONMENTAL SCORECARD

THE 10 MOST IMPROVED

CIBA-GEIGY Ardley, New York

INDUSTRY
Chemicals

SALES
\$4.5 billion

PROFITS
N.A.

This wholly owned subsidiary of Switzerland's chemical giant, once considered a delinquent and now a darling of environmental groups, has made reduction of hazardous wastes and byproducts a top priority. Result: Releases of toxic chemicals fell 50% from 1988 to 1992; chemical emissions targeted by EPA's voluntary program decreased 42% between 1988 and 1991. Needs to strengthen employee incentive programs and better collate waste reduction data.

HEWLETT-PACKARD Palo Alto, California

INDUSTRY
Computers

SALES
\$16.4 billion

PROFITS
\$549 million

In 1988, H-P topped the Dirty Dozen list of the Silicon Valley Toxics Coalition, an environmental pressure group. The company has since reduced releases of toxic chemicals 71% and chemicals targeted in the EPA's voluntary program 88% through 1991. Stopped using CFCs altogether by May 1993 and cut hazardous wastes 70% from 1983 to 1992; labels plastic parts for easier recycling and is switching to vegetable-based rather than chemical-based inks for its packaging.

JOHNSON & JOHNSON New Brunswick, New Jersey

INDUSTRY
Pharmaceuticals

SALES
\$13.8 billion

PROFITS
\$1.0 billion

Its North Brunswick plant, named one of New Jersey's five biggest air polluters in 1989, achieved a 68% reduction in toxic releases from 1987 to 1992 by switching to solvent-free manufacture of Band-Aids and introducing tighter emissions controls. The company reduced overall toxic chemical releases 42% from 1988 to 1991 and cut waste headed for landfills by 33% in 1991. Still needs to work faster on goal of designing pharmaceuticals with less environmental impact.

S.C. JOHNSON & SON Racine, Wisconsin

INDUSTRY
Consumer products

SALES (est.)
\$3.3 billion

PROFITS
N.A.

Stopped using CFCs in 1975, the first major company to do so; its aerosol products contain less than 10% of the volatile organic compounds identified as contributors to urban smog—far less than many comparable products. At its only U.S. plant, reduced solid waste 60% since 1985; pipes in methane gas from town landfills for energy and recycles 75% of waste water. After increasing in 1989, its releases of toxic chemicals went down 28% by 1991.

MINNESOTA MINING & MFG. St. Paul

INDUSTRY
Scientific equipment

SALES
\$13.9 billion

PROFITS
\$1.2 billion

Its 3P (Pollution Prevention Pays) project, launched in 1975, is the grandfather of all industrial pollution programs; so far, 3,965 projects have reduced air emissions and waste by a total of 1.2 billion pounds. Now the company returns air emissions credits to the government rather than profit from them. Its Commute-a-Van program for employees saves 175,000 gallons of gasoline a year. Even so 3M is one of America's largest emitters of toxic chemicals.

NALCO CHEMICAL Naperville, Illinois

INDUSTRY
Chemicals

SALES
\$1.4 billion

PROFITS
\$145 million

Lowered toxic chemical releases 40% from 1988 to 1991; exceeded the EPA goal of reducing the use of targeted chemicals 33% by 1992; recycles 95% of all process chemicals. Its new Porta-Feed delivery system eliminates the need for 1.3 million chemical drums. From 1990 to 1991, production of hazardous waste fell 17.8%. Although it has doubled its waste-recycling efforts, Nalco created more solid waste in 1991 than the year before.

POLAROID Cambridge, Massachusetts

INDUSTRY
Photographic equipment

SALES
\$2.2 billion

PROFITS
\$99 million

Assailed in the mid-1980s for polluting Boston Harbor, the company reduced releases of toxic chemicals 27% and solid waste 22% from 1988 to 1992. Now it is trying to design new products with minimal environmental impact. For example: Its Helios dry medical-imaging system eliminates chemical emissions. Polaroid can make faster strides by developing more water-based and low-toxicity substitutes for highly toxic chemicals.

SHELL OIL Houston

INDUSTRY
Petroleum refining

SALES
\$21.2 billion

PROFITS
(\$190 million)

Was one of the first companies to phase out the controversial practice of deep well injection for hazardous waste, and achieved a dramatic 88% reduction in toxic chemical releases between 1988 and 1989. It set a goal to exceed the 50% chemical reduction targets in the EPA's priority program and volunteered to decrease four other toxic chemicals 65% by 1995. In 1992 it was on track to meet these aims. Needs recycling and waste reduction goals.

SUN Philadelphia

INDUSTRY
Petroleum refining

SALES
\$8.7 billion

PROFITS
(\$559 million)

First FORTUNE 500 company to sign the Ceres principles drawn up by the Coalition for Environmentally Responsible Economies, which promotes an environmental code of conduct for companies. Sun's toxic releases are substantially below industry average; it is the first company east of the Mississippi to install pumps at gas stations for methanol, which produces lower levels of smog-forming compounds. Still lacks goals for recycling and waste reduction.

UNION CAMP Wayne, New Jersey

INDUSTRY
Forest and paper products

SALES
\$3.1 billion

PROFITS
\$76 million

Its Savannah mill, once identified as Georgia's biggest polluter, reduced toxic chemical releases 74% from 1988 to 1991. The company introduced a state-of-the-art oxygen and ozone paper-bleaching technology at its Franklin, Virginia, mill; the switch from chlorine bleaching allows waste water and process chemicals to be recycled, and also reduces chloroform 99% and dioxin to undetectable levels. Suggestion: Extend this new technology to other mills.

ENVIRONMENTAL SCORECARD THE 10 LAGGARDS

AMERICAN CYANAMID Wayne, New Jersey

INDUSTRY
Pharmaceuticals

SALES
\$5.3 billion

PROFITS
\$395 million

Generated the third-highest number of toxic chemical releases in the U.S. in 1991; uses deep well injection for hazardous waste at its Westwego, Louisiana, plant, though plans to be mostly out of that controversial technology by 1994; admits to being a potentially responsible party at 71 Superfund sites; consistently receives low ratings from both environmentalists and firms that direct investors to environmentally responsible companies.

BOEING Seattle

INDUSTRY
Aerospace

SALES
\$30.4 billion

PROFITS
\$552 million

Has insipid two-line environmental policy statement; sets few numerical goals for reducing waste and pollution; hazardous waste disposal is rising, not falling; shipments of solid waste to landfills nearly doubled from 1989 to 1992; releases of toxic chemicals increased since 1987; toxic releases, adjusted for sales, are worse than the aerospace average; failed to achieve interim goal of 33% reduction of chemicals targeted in EPA's voluntary program.

BP AMERICA Cleveland

INDUSTRY
Petroleum refining

SALES
\$17.8 billion

PROFITS
\$472 million

Until June, this wholly owned subsidiary of British Petroleum had no corporate pollution prevention or waste reduction goals. Has no plans to phase out deep well injection, which accounts for 88% of total releases. Its toxic chemical releases, adjusted for sales, are among the highest in the petroleum industry; it has paid a number of large fines to the EPA for spills, leaks, and violations. Also cited by the EPA for failing to report releases of certain chemicals.

E.I. DU PONT DE NEMOURS Wilmington, Delaware

INDUSTRY
Chemicals

SALES
\$37.4 billion

PROFITS
(\$3.9 billion)

Though its well-coordinated pollution prevention programs are making inroads in solving longstanding environmental problems and though it publishes a first-rate annual environmental report, Du Pont remains the biggest polluter in the nation, measured by toxic chemical releases (254 million pounds in 1991), down only 6% from 1988. The company is also a potentially responsible party at over 100 Superfund sites around the country.

GENERAL ELECTRIC Fairfield, Connecticut

INDUSTRY
Electronics

SALES
\$62.2 billion

PROFITS
\$4.7 billion

Admits being a potentially responsible party at more than 70 Superfund sites; a 1992 ruling by 32 state attorneys general forced a change in the efficiency claims for its Energy Choice light bulbs and imposed a hand-slapping \$165,000 fine. Its fines for OSHA violations were 150% higher than any other company's in the electronics industry. Though it has made progress in reducing total toxic chemical releases, GE consistently remains on most green groups' worst lists.

INTERNATIONAL PAPER Purchase, New York

INDUSTRY
Forest and paper products

SALES
\$13.6 billion

PROFITS
\$86 million

Second-largest emitter of toxic chemicals in the paper industry; no formal policy to harvest from only sustainable forests; chided by a U.S. district court judge for using "flowery corporate happy-talk" to inaccurately portray its environmental record to shareholders; paid numerous OSHA fines for violations, as well as a \$2.2 million fine for illegal storage of hazardous waste and falsification of records in 1991; has no corporate hazardous waste reduction goals.

LOUISIANA-PACIFIC Portland, Oregon

INDUSTRY
Forest and paper products

SALES
\$2.2 billion

PROFITS
\$180 million

The EPA recently levied an \$11.1 million fine against this giant paper company, the second-largest civil environmental penalty ever, for falsely reporting emissions at 14 plants and required the company to install \$70 million in pollution control equipment. In 1990, L-P paid a \$2.9 million fine for dumping millions of gallons of untreated waste daily into the Pacific Ocean; more suits pending; no corporate numerical goals for waste reduction; no reduction in toxic emissions since 1988.

MAXXAM Houston

INDUSTRY
Metals

SALES
\$2.3 billion

PROFITS
(\$7 million)

This company, parent of Kaiser Aluminum and Pacific Lumber, doubled its rate of cutting timber after buying Pacific in 1985, creating an ongoing tug of war between environmentalists and the company. It has no formal environmental policy or pollution prevention goals; has not joined EPA's voluntary reduction program for targeted chemicals; uses deep well injection to dispose of hazardous waste. Its toxic releases have increased since 1989.

MONSANTO St. Louis

INDUSTRY
Chemicals

SALES
\$8.5 billion

PROFITS
(\$88 million)

Give this chemical giant an A for effort. It is one of the first major companies to publish an environmental annual report. CEO Richard Mahoney has set ambitious goals to get Monsanto off the list of top toxic emitters, and it reduced worldwide air emissions 66% by 1991. But overall releases are down only 23% since 1987; the company remained the fifth-largest emitter, as of 1991; and it still disposes of hazardous waste by underground injection.

USX Pittsburgh

INDUSTRY
Petroleum refining

SALES
\$16.2 billion

PROFITS
(\$1.8 billion)

The EPA slapped a \$1.6 million fine on this oil and steel company for illegal dumping at its Gary, Indiana, steel plant and proposed barring it from doing business with the U.S. government—the EPA's most punitive penalty—unless it agreed to a \$30 million remediation plan; most activities at another Pennsylvania steel plant were closed in 1991 for repeated air emissions violations. OSHA has repeatedly fined the company for unsafe working conditions.