

Industry's Toxic Addiction

by Pratap Chatterjee

In 1994, industry released more than 1.1 billion pounds of toxins linked to human reproductive disorders. Despite grave public health threats, industry is fighting to keep polluting and keep the public in the dark.

Polar bears in the Arctic circle and albatrosses in the middle of the Pacific were the last creatures that scientists expected to be threatened by synthetic chemicals. But there's no longer such a thing as pristine wilderness, or pure ocean vastness -- those are as extinct as the dodo, and just as much casualties of human activity. Consider that the albatross population suffered a 3 percent drop in reproduction rates over the last few years, and New Zealand researchers discovered abnormally high levels of synthetic chemicals in the birds' bodies. When polar bear reproduction dropped by more than half, Norwegian researchers documented levels of toxic chemicals in the animals that are **3 billion times higher** than in the cold waters near which they live.

The recently published book, "Our Stolen Future," brings together mounting scientific evidence that thousands of synthetic chemicals in common use are accumulating all along the food chain and are turning up everywhere from remote virgin forest to supermarket shelf. If the authors are right, a group of chemicals known as endocrine disrupters and hormone mimickers are undermining the health and genetic viability of hundreds of species, including humans.

And because the implicated chemicals including PCBs, chlorine, atrazine, DDT and various plastics -- used to manufacture five gallon water containers and approximately half the canned goods in this country -- are so widely used in agriculture and industry, the financial vitality and survival of many corporations is also at stake.

Not surprisingly, then, in addition to calls for further investigation and research, the storm of controversy around the new studies implicating these chemicals has also sparked a counterattack funded and promoted by the corporations that would be affected by regulation or a ban.

MUGGING THE MESSENGERS

The way these chemicals work is to "mimic" or "block" estrogen and progesterone natural chemicals known as hormones which instruct the body in how it should develop and reproduce. "Hormonally active synthetic chemicals are thugs on the biological information highway that sabotage vital communication. They mug the messengers or impersonate them. They jam signals. They scramble messages," write the authors of *Our Stolen Future*. For example: "Imagine what would happen if somebody disrupted communications during the construction of a large building so the plumbers did not get the message to install the pipes in half the bathrooms before the carpenters closed the building."

Now imagine that the chemicals that affect communications in the endocrine system are everywhere "in the finest caviar, in penguins in Antarctica, in the bluefin tuna served at a sushi bar in Tokyo, in the monsoon rains that fall on Calcutta, in the milk of a nursing mother in France, in the blubber of a sperm whale cruising the South Pacific."

Throw in a couple more alarming facts. Billions of pounds of these chemicals are pumped annually into the air, land, and water, but the amount required to disrupt reproduction cycles could be as low as one part in a trillion equivalent to just one drop of liquid in the cars of a six-mile-long cargo train. Humans are particularly vulnerable since the concentration of many of these chemicals increases in animals high in the food chain. The reason is two-fold: First, the chemicals are "persistent," meaning they do not break down, and second, they are stored permanently in body fat so that when a larger animal eats smaller animals, the predator incorporates the pollutants of its prey.

Finally, perhaps the most devastating news of all is that some of the chemicals with weak endocrine disrupting effects on their own become far more dangerous when two or more of them are found together. Research conducted by two scientists from Tulane University in Louisiana on four pesticides (chlordane, dieldrin, endosulfan, and toxaphene) and several different kinds of PCBs showed that two or more such chemicals in combination could be as much as 1,600 times as powerful as the individual chemicals alone.

CHEMICAL CATASTROPHE

In the past, scientists looking for the harmful effects of chemical contamination have tended to focus on cancer. While there is evidence linking this class of chemicals to the 32 percent rise in breast cancer rates and the 126 percent increase in prostate cancer in recent years, the situation is more complex and far more alarming. "Humans in their relentless quest for dominance over nature may be inadvertently undermining their own ability to reproduce or to learn and think," warns *Our Stolen Future* co-author Theo Colburn. Exposure to estrogen mimicking or endocrine disrupting chemicals such as dioxin may not kill, but may, notes an EPA report, lead to "complex and severe effects including cancer, feminization of males and reduced sperm counts, endometriosis and reproductive impairment in females, birth defects, impaired intellectual development in children, and impaired immune defense against infectious disease."

These chemicals could also be a significant factor in the rapid disappearance of many species around the world, such as the golden toad in Costa Rica, panthers in the Florida Everglades, otters in England, and dolphins off the coast of Turkey. For example, after Tower Chemical spilled large quantities of dicofol, a pesticide closely related to DDT, into Lake Apopka in the early 1980s, alligators started appearing with penises so shrunken they could not reproduce.

For fairly obvious reasons, though, the area which has galvanized the scientific community and the media is the link between these chemicals and a well-documented and dramatic drop in human sperm count around the world. Some

61 studies collected by Danish researchers have shown that sperm counts in a number of European countries have fallen by half in the last 30 years, while those in rapidly industrializing countries in East Asia are dropping fast.

DES, (diethylstilbestrol) provided one of the first confirmed examples of how these chemicals can affect not only those who are directly exposed, but also future generations. In the late 1950s, and '60s this estrogen mimicker was prescribed to millions of women for a variety of problems. Grant Chemicals, one of the manufacturers, claimed that DES produced "bigger and stronger babies," while doctors handed it out to prevent miscarriages, suppress milk production, and as a "morning-after" contraceptive. It was not until the 1970s that researchers discovered that the drug dramatically increases chances of clear-cell cancer and severe damage to the reproductive tract that can result in ectopic pregnancies. (Pregnancies that develop in the fallopian tubes as opposed to the uterus can cause ruptures leading to severe bleeding and sometimes death.) DES is now suspected of having affected male offspring, and of possibly causing brain problems in children of both genders.

INDUSTRY FIGHTS BACK

As they did when faced with evidence of the dangers of DES, tobacco, global warming, nuclear waste, and pesticides, industry leaders have denied that there are any problems, and mounted PR campaigns. Faced with a growing body of evidence on the impact of chemicals on the endocrine system, they have turned to industry-sponsored groups and scientists to disprove the studies available to potential litigants and quoted by environmental groups pushing for regulation.

One industry scientist with a long history of producing research that helped establish the safety of his employer's products was Bill Gaffey, a mathematician who retired in 1989 as director of epidemiology for Monsanto Corp. Gaffey published studies in 1980, a year after he started working for the chemical giant, to show that there was no evidence of unusual cancers among workers exposed to dioxin at a Monsanto plant in Nitro, West Virginia. The plant

manufactured Agent Orange for chemical warfare in Vietnam. *8 The study was important to Monsanto because it was facing hundreds of millions, possibly billions, of dollars in lawsuits by tens of thousands of Vietnam veterans and by former Monsanto workers, all claiming they had been harmed by exposure to dioxin-laden Agent Orange.

Peter Montague, editor of [Rachel's Environmental and Health Weekly](#), charges that the Gaffey study gave the Veterans Administration the "evidence" it wanted to justify denying medical benefits to the Agent Orange vets. Finally, the research allowed the EPA "to set generous limits on dioxin exposures for the American public, thus providing minimal regulation for politically powerful industries such as paper, oil, and chemicals," says Montague.

Gaffey's role may have gone beyond sycophant science. Lawyers involved in a 1984 worker lawsuit against Monsanto discovered that Gaffey had listed four workers as "unexposed" to dioxin when the same four workers had been classified as "exposed" to dioxin in a previous Monsanto study. Gaffey's co-author, who had worked on both studies, confirmed that the data had been cooked. Six years later the EPA acknowledged that the study was fraudulent and found that dioxin was a probable carcinogen.

Gaffey's role in countering the studies cited by cancer victims and environmental groups has been taken up by others. Among the most quoted scientists on this subject is Stephen H. Safe of Texas A&M University, who has published papers contending that the contribution of synthetic chemicals to disruption of endocrine systems is so "minuscule" that it amounts to less than one-thousandth of one percent of the amount of naturally occurring chemicals that have the same effect.

He now tells reporters that the fears of environmentalists could be dangerous to the economy. "You could be talking about thousands of jobs and billions of dollars to get rid of some of these chemicals, all because of something that we have no compelling reason to believe is really a threat."

Safe, whose work is partly funded by the Chemical Manufacturers Association, is not the only industry-backed scientist to publish studies that dismiss the impact of endocrine-disrupting chemicals on human health. Last year, researchers from Dow Chemical and Shell Oil showed that the use of more complex statistical models could generate the conclusion that human sperm counts have been increasing, not decreasing, during the past 20 years

These industry-funded studies have been given a major boost by Gina Kolata, a New York Times reporter, who used studies by Safe and others as background material for three major articles that throw cold water on *Our Stolen Future*.

Kolata ran into trouble, however, when she quoted several scientists as skeptical of the book when the scientists themselves did not feel that way: "(E)ven in quoting these contrarian scientists, Ms. Kolata deceives and misleads her readers by selectively distorting their views," charged Montague. When the New York Times did not publish protest letters from the misrepresented scientists, they bought advertising space to set the record straight.

Meanwhile, industry is actively lobbying to redirect the debate. In January 1991, chief executives of four major US paper companies John A. Georges of International Paper, T. Marshall Hahn, Jr. of Georgia-Pacific, Furman C. Moseley of Simpson Paper, and Andrew C. Sigler of Champion International went to see William Reilly, then head of EPA, to convince him to re-assess the impact of dioxin.

A memo from the four to Reilly after the meeting described their satisfaction: "We were encouraged by what we perceived as your willingness to move expeditiously to re-examine the potency of dioxin and chloroform in light of the important new information that has been submitted with respect to those chemicals" which indicated the "prevailing view that low-level dioxin exposures do not pose a serious health threat."

The EPA study, however, backfired on industry. In 1994, agency scientists concluded that dioxin probably causes cancer in wildlife and humans; harms

the immune and reproductive systems in fish, birds, and mammals (including humans); and concluded that "there is no safe level of dioxin exposure and that any dose no matter how low can result in health damage."

LOOKING TO THE FUTURE

Industry, not satisfied with government studies, is commissioning its own investigations. The blandly named Endocrine Issues Coalition put together by the American Crop Protection Association, the Chemical Manufacturers Association, and the Society of Plastics Industry recently released a research agenda. It includes studies on breast cancer, sperm quality, and endometriosis in humans; estrogen effects in wildlife; a dioxin mechanistic study; animal and aquatic toxicology studies; environmental chemistry; testing methods; exposure studies; and risk assessment. According to Ron Miller of Dow Chemical Corp., chair of the EIC, the group has a million dollars in research funding.

Another industry-backed organization, the Chemical Industry Institute of Toxicology (CIIT) in Research Triangle Park, North Carolina, has just launched a three-year, \$5 million research effort into how natural and synthetic chemicals affect the human hormone system. Cancer toxicology research which traditionally took up two-thirds of its program is now making way for the study of non-cancer effects such as neurotoxicity and endocrine effects. CIIT is funded by dues from about 40 member chemical companies including DuPont, Dow Chemical, Exxon Chemical, General Electric, and Hoechst Celanese. Not every major company is a member BASF, Elf Atochem have never paid dues to CIIT while other major players such as Amoco Chemical, BP America, Dow Corning, ICI Americas, Olin, and Rhone-Poulenc, have dropped out.

In addition to sponsoring and promoting potentially sympathetic scientific studies, the affected industries are investing heavily in public relations campaigns designed to challenge the growing anti-chemical lobby. In 1993, the Chemical Manufacturers Association formed the Chlorine Chemistry Council (CCC) in Washington, DC, which in turn hired the aggressive public relations firm Mongoven, Biscoe and Duchin (MBD) to target environmental groups. John

Mongoven, co-founder of the DC-based firm, has taken up the issue personally and publishes a monthly briefing for his clients. His long-term strategy in countering those warning of the dangers of disrupter chemicals, says Peter Montague, is to characterize the "phase out chlorine" position as "a rejection of accepted scientific method," as a violation of the chlorine industry's constitutional right to "have the liberty to do what they choose," and thus a threat to fundamental American values.

It is not the first time Mongoven has flacked for potentially deadly products. He began his PR career in 1981 when he was hired by the Nestle Corp. to organize its response to a consumer boycott. Activists had charged that the company's infant formula marketing practices in the Third World encouraged poor women with no access to clean water to abandon breast-feeding and switch to expensive infant formula. Using dossiers that Mongoven compiled on the churches and other groups leading the boycott, Nestle played on divisions and rivalries within the activist coalition to talk wavering "moderates" into abandoning the boycott.

MBD has often used similar strategies to neutralize activist groups on behalf of a variety of corporate clients. For example, after analyzing dioxin opposition, MBD picked the New York-based environmental group INFORM as a "moderate" group worth targeting for possible cooptation. This kind of tactic is an MBD specialty according to PR Watch editor John Stauber. He writes:

The field operatives who gather information for Mongoven, Biscoe & Duchin are typically polite, low-key and do their best to sound sympathetic to the people they are interrogating. They have misrepresented themselves, claiming falsely to be journalists, friends of friends, or supporters of social change. Most of the time, however, they simply give very limited information, identifying their company only by its initials and describing MBD euphemistically as a "research group" that helps "corporate decision makers develop a better appreciation of the public interest movement" in order to "resolve contentious public policy issues in a balanced and socially responsible manner."

FLACKING FOR SECRECY

But perhaps the most far-reaching lobbying efforts are those directed at changing government regulations. In January, Ciba-Geigy's Crop Protection division met with the EPA's Office of Water and Office of Pesticide Programs to present its own studies on the health impact of the pesticide atrazine to counter evidence of health risks presented by the Washington-based Environmental Working Group.

Industry lobbying groups have also quietly begun to work with government to change the way that emissions of toxic chemicals are reported to the public. Traditionally, all emissions of chemicals listed as toxic by the government must be reported in a form that is accessible to the public. In the last three years, 18 states have voted in various versions of laws that allow companies to avoid telling authorities about such emissions if industry conducts systematic environmental audits internally. The Wall Street Journal says that the new laws "encourage companies to monitor their own activities rigorously without fear that what they discover will be used against them." The newspaper reports that these laws have been promoted by several industry lobby groups including the Compliance Management and Policy Group, the Corporate Environmental Enforcement Council, and the Coalition for Improved Environmental Audits.

One such law in Colorado allows companies to withhold information about air pollution. Another, under debate in Arizona, would implement the "broadest secrecy laws in the nation preventing the public from knowing what has actually happened at a facility," according to Felicia Marcus, regional administrator for the EPA.

LIFESTYLE CHANGES

Even when health authorities and governments make a conscientious effort to set safety standards, they face considerable difficulties. One of the main problems is that the "safe" levels for chemicals in emissions and in everyday products such as pesticides have been traditionally based on their impact on adults, not children, who are at a far greater risk; the assumption is that it is mostly adults who use these products. But there is growing worry that

the quantity of the chemical is largely irrelevant; the crucial question is not how much, but when exposure occurs. Thus one part in a million of a certain chemical may be perfectly safe during 99.99 percent of the life-cycle of a normal human being, but exposure to one part in a trillion at a particular time during pregnancy may cause a life-long tragedy.

Given this danger, some activists say the only way to prevent widespread sickness and disease is to question the current course of human "progress." Montague, who has been tracking the effects of synthetic chemicals on human health for 10 years, advocates questioning the use of all such substances. "The studies show that the strange new chemicals that govern our current patterns of lifestyle and consumption are killing us and making us sick," he says. "There is a clear pattern in our history that shows that every time we discover a dangerous chemical, we substitute it with a different one that we know very little about. We can't continue to do this. We have to stop using these chemicals and start living simpler lives."

Some institutions have already suggested that entire classes of chemicals be banned. Studies by the International Joint Commission, a scientific body set up to study water quality in the Great Lakes in Canada and the US, have shown that of the toxic substances found in the lakes, half of those that cause cancer and other health problems contain chlorine. As a result, the Commission recommended phasing out all chlorine-based chemicals. This conclusion was endorsed by the American Public Health Association.

While most scientists and government agencies are taking a "wait and see" approach, some local communities around the country are organizing to get answers for themselves. Last year a grassroots group of women in Marin County, California, a region that has the highest rate of breast cancer in the nation, decided to stop waiting for the medical community and commissioned its own research. The Marin Breast Cancer Watch is currently preparing a survey of the county to try to determine if environmental causes can explain the high cancer rates.

In Seattle, groups including the Women's Health Action Network and the Washington Toxics Coalition meet monthly to talk about issues of reproductive health and synthetic chemicals. Major environmental organizations like the Environmental Defense Fund and Greenpeace have also begun to lobby government and industry on these matters in national capitals.

While industry claims we don't know enough to justify action, many activists and researchers warn that if we wait for definitive answers, it may be too late. The cost of doing nothing will be illness and death for individuals, devastation of the environment, and serious genetic damage for many species, including humans. Many of the estimated 100,000 chemicals on the market today have not undergone rigorous testing and about 1,000 new ones are added every year. The burden of proof must shift so that the individual and combined impact of these chemicals is assessed and those that are not proven safe are banned. A phase-out period may be necessary to find natural substitutes and alternatives for substances already in use, but the ultimate goal must be a ban on such substances. In addition, no new chemicals should be introduced until complete testing is completed.

This article first appeared in Covert Action Quarterly

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