Each year some 3.5 billion pounds of industrial toxins, and an additional 1 to 2 billion pounds of pesticides are intentionally released into the environment of the U.S., according to U.S. Environmental Protection Agency.

During the early 1990s it has become fashionable for the mass media to portray these chemicals as having little effect on human or environmental health.[1] However, in scientific and medical journals, the evidence linking chemicals to ill health has continued to accumulate.

Writing in the AMERICAN JOURNAL OF PUBLIC HEALTH in 1992, Philip J. Landrigan, chairman of the department of community medicine at the Mount Sinai School of Medicine in New York City, said, "Disease caused by toxic chemicals in the environment is a substantial... causation [illness] and mortality [death] in the United States and around the world."[2] He went on to say, "Public health workers and the makers of public policy must recognize that toxic chemicals in the environment are important, widespread, proven causes of human disease. Each year preventable exposures to chemical toxins sicken and kill thousands of persons of all ages in the United States and around the world. These hazards must be confronted. They cannot be wished away... Reduction of exposures to chemical toxics will prevent thousands of deaths and will improve the quality of hundreds of thousands of lives."

Is there any evidence that these claims are true?

LEAD POISONING: "Lead poisoning is epidemic among young U.S. children," Landrigan writes. "The Centers for Disease Control (CDC) estimates that 3 to 4 million American pre-school children have blood lead levels above 10 micrograms per deciliter (mcg/dl). Blood lead levels in this range in young children have been shown to cause depression of neurological and psychological function, effects that appear to be permanent."[3]

(In 1993, the National Research Council of the National Academy of Sciences published the estimate that 6 million American children and 400,000 fetuses, at any given time, have 10 mcg/dl lead in their blood, or more, and that this level of lead "places them at risk of adverse health effects"--including reduced IQ and reduced ability to concentrate.[3])

ASBESTOS: "Asbestos in the workplace has created an absolute disaster," says Landrigan. By the year 2000, an estimated 300,000 American workers will have been killed by exposure to asbestos. Deaths will continue to occur well into the 21st century. With the overseas spread of asbestos-containing building materials, the pandemic [wide epidemic] is now extending to the third world.

OCCUPATIONAL DISEASE: "Studies conducted in New York state have estimated that 50,000 to 70,000 workers die each year from chronic occupational diseases resulting from past exposures to toxic substances," Landrigan writes. "Included are lung cancers and mesothelioma [cancer of the lining of the chest cavity] from asbestos exposure; bladder cancer among dye workers; leukemia and lymphoma in workers exposed to benzene and ionizing radiation; chronic bronchitis in workers exposed to dusts; disorders of the nervous system (including, possibly dementia, Parkinson's disease, and motoneuron disease [Lou Gehrig's disease]) in workers exposed to pesticides, solvents, and certain other neurotoxins; renal [kidney] failure in workers exposed to lead; and cardiovascular disease in workers exposed to carbon monoxide and carbon disulfide."

In addition to what is known, millions of American workers are being exposed to chemicals whose effects are unknown because 80% (or 48,000) of the 60,000 chemicals now in use have never been tested for their carcinogenic [cancer-causing], neurotoxic, immunotoxic, or other toxic effects, Landrigan says.

In addition to the 50,000 to 70,000 deaths cause by toxic exposures in the workplace each year, an estimated 350,000 new cases of illness occur among workers each year from toxic exposures on the job. Landrigan says.

CANCER: Between 1950 and 1988, for U.S. whites, age-adjusted incidence [occurrence] for all forms of cancer rose by 43.5% and age-adjusted cancer mortality [deaths] increased by 2.9%.

"Explanations for these increases do not exist," says Landrigan. "They do not appear to be attributable solely to changes in cigarette smoking." Several of the cancers for which increased incidence at all ages (and mortality above age 55) have been noted in a number of industrialized nations are not known to be related to smoking: these include multiple myeloma [cancer of the bone marrow], brain cancer, cancer of the breast, testicular cancer, and non-Hodgkin's lymphoma.

"Changes in competing causes of death, improved access to health care, and alterations in diagnostic technology also do not appear to account entirely for the observed changes in cancer incidence and mortality," says Landrigan.

During 1993, the relationship of toxic chemicals to breast cancer came into sharp focus. Cancer of the female breast has increased 58% during the past 35 years. Even when better diagnosis (mammography) is taken into account, it appears that breast cancer is increasing at a steady one percent per year. In 1940, an American woman's lifetime risk of getting breast cancer was one in 16; today it is one in 8--a rate that warrants the term "epidemic." A review of recent studies, by Devra Lee Davis and others, appearing in ENVIRONMENTAL HEALTH PERSPECTIVES in 1993, offered many lines of evidence linking breast cancer to "xenoestrogens"--xeno from the Greek word for "stranger or foreigner."[4] Xenoestrogens are common toxic chemicals that mimic, or interfere with, the body's natural estrogen. Estrogen is female sex hormone--the chemical in blood that gives rise to a woman's monthly cycle. In the 1990s, it has been discovered that many common industrial chemicals and pesticides mimic hormones and thus can interfere with fundamental bodily processes. (See RHWN [365:].) DDT, methoxychlor, chlordecone (kepone), PCBs, atrazine (and other triazines), benzene, and polycyclic aromatic hydrocarbons [PAHs], among others, can act like sex hormones and interfere with fundamental biological processes, such as reproduction, in wildlife and humans. PAHs are produced by automobiles, by burning of fossil fuels, and by incinerators. Pesticides and other xenoestrogens are manufactured by firms such as DuPont, Monsanto, and Dow.

Davis and her colleagues revealed that xenoestrogens stimulate the growth of cells in the breast, very possibly giving rise to cancer. From studies of humans and laboratory animals Davis and her colleagues found compelling evidence that estrogens lie at the heart of the breast cancer problem, and that xenoestrogens very well may be causally related to the epidemic.

From epidemiological studies, there is evidence that exposure of females to xenoestrogens while in the womb can increase their risk of breast cancer as adults. And in 1993, several studies raised the possibility that exposure of males to xenoestrogens while in the womb reduces their ability to produce sperm after they mature. The average male today produces only half as much sperm as his grandfather did, and exposure to environmental toxins may well be the cause of this decline. [5] (If this decline were to continue at historical rates, humans in industrialized nations would have difficulty reproducing themselves by about the year 2020.) Furthermore, there is now evidence that prostate cancer, the second leading cause of cancer deaths in U.S. men (after lung cancer) is linked to xenoestrogens.
Journals published by the American Association for the Advancement of Science, and the American Chemical Society, as well as the American Public Health Association, in 1993 took official notice of this new information about chlorinated chemicals and human health. Prime Time on ABC TV aired an exploratory program on breast cancer and DDT. But for the most part the mass media in 1993 continued to promote the view that the connection between chemicals and ill health is imaginary and that the public suffers from "chemophobia."

Without public understanding of current scientific and medical views, public policy cannot very well protect public health. As Philip Landrigan said in 1992, calling for a policy of "containment:"

"The tragedy of environmental diseases is that they are highly preventable. Toxic environmental diseases arise as a direct consequence of human activity and can therefore, in theory, be prevented through modification of that activity. The control of toxic disease does not require changing the behavior of millions of addicted or habituated individuals, only the containment of common sources of exposure to chemical toxins. Such containment is demonstrably achievable through legislation, regulation, and other well-understood mechanisms of communal action. Children must be protected from exposure to lead. Automotive and industrial atmospheric emissions must be curbed. Dangerous chemicals in the work environment must be replaced with safe substitutes; hazardous processes must be enclosed and ventilated; and workers and consumers must be provided with knowledge, training, and protective equipment. Premarket testing of new chemicals and processes constitutes a very effective approach to the prevention of toxic disease."

--Peter Montague


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