Last week Congress permanently closed down its scientific research arm, the Office of Technology Assessment (OTA). Although we did not agree with the recommendations of every report that OTA produced during its 23 years of policy analysis, we know that the death of OTA will be an immeasurably great loss to the nation's ability to get the facts straight. The so-called conservatives in this Congress claim to favor public policies based on "good science," yet they are hacking away the infrastructure of laboratories and institutes that, for decades, has done the nation's scientific work. Next on the chopping block is the National Institute of Standards and Technology (NIST, formerly the National Bureau of Standards), which designs standardized testing and measurement protocols that are relied upon by scientists and engineers throughout the world. This Congress is moving us steadily back toward the dark ages.

On the chopping block as we go to press is the university-based program of basic research within the National Institute of Environmental Health Sciences (NIEHS), part of the National Institutes of Health (NIH). The NIEHS Superfund Basic Research Program, now in its ninth year, provides funding to 17 programs at 60 universities and institutions around the country, studying the human health effects of hazardous chemicals in the environment, especially those found at leaking waste dumps. Congress has already reduced the appropriation for this program, which makes up barely 1% of the Superfund toxic waste cleanup effort. But now the House Subcommittee on Commerce, Trade, and Hazardous Materials, chaired by Rep. Michael Oxley of Ohio's 4th District, is refusing to reauthorize the program entirely, thus killing it dead. Mr. Oxley's position is that Superfund money should only be used for cleanup, not for any "extraneous" uses like determining how clean our cleanups need to be, and why. Like other so-called "conservatives" who claim they want policies based on "good science," Mr. Oxley reveals his true intentions as he prevents any "good science" from being funded and carried out.

Looking at some of last year's research highlights produced by the Superfund research program, one can appreciate Mr. Oxley's fear of what good science will reveal:

** Researchers determined the dose-response relationship for benzene down to doses as low as those received by ordinary people. Millions of Americans are exposed to small amounts of benzene when, for example, they pump their own gasoline. These benzene experiments strongly suggest that a cancer risk from benzene is present even at very low doses. With millions of people exposed to benzene every day, it seems important to know that benzene really does cause cancer.

** Other investigations demonstrated for the first time in laboratory animals that benzene exposure, which has been associated with leukemia and aplastic anemia in humans and animals, is also mutagenic; that is, it causes inheritable genetic changes which can affect the next generation, the next after that, and so on.

** Researchers showed that several biological markers (subtle observable changes in a person) can be used to detect probable chromium exposure in humans living near places where chromium wastes have been dumped. Researchers studied Jersey City, N.J., and surrounding Hudson County where corporate polluters dumped chromium wastes on the ground for decades. Such research should make it easier to sue corporate polluters for exposure to toxics.

** Researchers developed a test to detect a single molecule of a cancer-associated chromosomal rearrangement in the presence of DNA from a million normal human cells. This work offers the possibility of very sensitive detection of the ability of chemicals to cause chromosomal rearrangements as an indicator of their cancer-causing potential.

** Researchers are studying the neurological and immune-system effects of drinking water containing mercury compounds. Early results indicate that even a small dose of methyl-mercury, such as 5 ppm [parts per million] in drinking water, impairs neurological, endocrine (hormone), and immune-system functions in animals. This corresponds to a daily consumption of 0.3 milligrams per kilogram (mg/kg) of body weight which is smaller than the "safe" dose of 0.48 mg/kg body weight indicated by the World Health Organization. In other words, mercury is even more dangerous than formerly believed.

** A large epidemiologic study examined the respiratory disease hazards of susceptible individuals living near toxic waste sites and industrial facilities. Analysis of interim data has provided important information on the association between asthma status (active or inactive) and exposure to irritants --active asthematics have been found to suffer an adverse effect on lung function resulting from irritant chemical exposure (after adjustment for smoking). Asthma is increasing each year in the U.S. population, and annual production of toxic chemicals is increasing as well. Could these two trends be related? It would be important to know.

** Researchers demonstrated a high degree of correspondence between laboratory and field-test results of immune-system toxicity in dogs exposed to industrial PCBs [polychlorinated biphenyls]. Not only have these studies clarified effects of PCBs on the immune system, but they have sparked a number of spin-off studies involving the thyroid, lymphocyte (white blood cell) development, and immune function. These studies help clarify how PCBs affect behavior, physiology, and response to infectious disease, in addition to environmentally-induced threats such as cancer. Efforts to date have provided a key step in validating laboratory immune-system toxicity observations with field studies of animal health.

** In a study comparing effects of perinatal (near the time of birth) vs. adult exposure to PCBs, researchers have found that toxic effects on the brain occur in completely opposite ways. In adults, ortho-PCBs reduce brain dopamine levels while dioxin-like coplanar-PCBs have no such effect. (Dopamine is an important natural chemical in the brain.) However, following perinatal exposure, dioxin-like PCBs elevate brain dopamine concentrations and alter the behavior of exposed female offspring while ortho-PCBs reduce brain dopamine concentrations. Thus, PCB exposures have opposite effects, depending on the age at exposure and the type of PCBs to which the organism is exposed. These results suggest that PCBs may not only directly affect nerve function, but may also alter steroid hormone function during a baby's development.

** Some of the most interesting and important Superfund research involves the role of estrogens and estrogen-like chemicals that seem to interfere with the reproductive system of fish, birds, and mammals, probably including humans. Estrogens are female sex hormones.

A study of sea gulls on Santa Barbara Island, not far from Los Angeles, in 1977 revealed bizarre gull behavior: female gulls were pairing up and sharing nests. In 1981, bird toxicologist Michael Fry published a study showing that, by injecting a small amount of DDT into bird eggs, he could produce hermaphroditic male birds --that is, male birds with the sex organs of both a male and a female. Fry's work met with skepticism back in 1981, but in the subsequent decade wildlife experts worldwide reported declining birth rates, hermaphroditic offspring, lowered sperm counts, and deformities of the testicles of fish, panthers, alligators, and other animals in polluted habitats.[2] Timothy Gross, a wildlife endocrinologist (hormone specialist) at the University of Florida in Gainesville, says, "If you look at people, the same pollutants are in our bodies. What is a safe level? We don't know. But I'd be a pretty naive scientist to conclude there couldn't be the same effects in humans."[3] The possible effects of estrogen-like chemicals on humans are now
thought to include prostate cancer and testicular cancer[4] in men, and perhaps breast cancer in women.[5] Prostate cancer has been steadily increasing in the U.S. in recent years, especially among older men; it strikes 244,000 men each year in the U.S., and kills about 40,000. Breast cancer strikes 183,000 American women each year and kills about 46,240. One out of every 8 women gets breast cancer, and one out of every 7 men gets prostate cancer. Because men with undeveloped testes, and castrated men, rarely develop prostate cancer, researchers began to suspect that sex hormones circulating in the blood might affect prostate cancer. "The evidence has since been stacking up to form an alarming picture that paints estrogen [female sex hormone] and testosterone [male sex hormone] as cancer culprits," says a recent issue of ENVIRONMENTAL HEALTH PERSPECTIVES,[4] published by the National Institute of Environmental Health Sciences [NIEHS], a staid scientific organization that does not use the word "alarming" lightly. Estrogens and estrogen-mimicking industrial chemicals in the environment have now been shown to alter testosterone levels in men. Thus the wildlife research supported by Superfund money has begun to pay off with a better understanding of major killer diseases. "We're relying on Superfund money for research," says wildlife-and-hormone specialist Timothy Gross at University of Florida. "And who knows what will happen to that? Congress now has a vendetta against lots of this environmental research," he says.[3]

Indeed, people calling themselves "conservatives" in Congress are determined to cut off the funding for this line of research. In their mind, the only good science is no science. Without federal funding, this research will cease because the private sector has no interest in showing how industrial discharges may be contributing to the nation's steadily-rising burden of cancer, diabetes, birth defects, endometriosis, and infertility.

Now a Congressman from Ohio is leading the charge to kill this important health research program. Mr. Oxley might change his mind if he received letters or phone calls from people in his district, who hold the power to end his political career. In addition, calls from outside his district might help, too. Mr. Oxley represents 11 counties (Allen, Auglaize, Crawford, Hancock, Hardin, Knox, Logan, Marion, Morrow, Richland and Wyandot), with the district's four most populous cities being Lima, Mansfield, Marion, and Findlay (Mr. Oxley's home town). His phone number in D.C. is: (202) 225-2676; fax: (202) 226-1160. Mail: 2233 Rayburn Building, Washington, D.C. 20515.

--Peter Montague


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