TOXICOLOGY

Panel Slams EPA's Dioxin Analysis

A panel of outside scientists looking at the risks of dioxin has failed to endorse the latest assessment by the Environmental Protection Agency (EPA). The 39-member panel, organized by EPA's Science Advisory Board (SAB), attacked many of the agency's assumptions and accused it of blurring the boundary between science and policy. Meeting in public last week to review the 4-year effort, panel members also urged EPA to incorporate a broader range of scientific opinion in their next version of the health assessment document. "It's hard to determine which conclusions are based on data and which represent policy-driven interpretations of data," says Purdue University pharmacologist William Greenlee, who will give EPA a summary of the board's health-effects comments next month.

Last fall EPA released a draft report that said a range of ill effects—from endometriosis to cancer—may be occurring in the general population as a result of exposure to low levels of dioxin and related compounds in the environment (*Science*, 16 September 1994, p. 1650). This position put EPA at odds with two blue-ribbon panels supported in part by industry, as well as other critics who believe the data do not support such a link.

The SAB panel, chaired by New York University environmental scientist Morton Lippmann, applauded the agency's attempt to assess both the cancer and noncancer risks of a broad class of compounds that includes dioxins, dibenzofurans, and some polychlorinated biphenyls. But it battered the report's conclusions on many fronts, in particular its assertion that there is no threshold below which dioxin poses no health risk. "Nothing in the data I've seen mandates such an approach," says SAB member Kenny Crump, an expert on pharmacokinetics with ICF Kaiser in Ruston, Louisiana.

Crump and others contend EPA erred in putting all its eggs in one basket in constructing a single dose-response model to explain dioxin's impact after it binds to a protein called the aryl hydrocarbon receptor. "It's a little arrogant of the agency to exclude the possibility of other mechanisms" of action that might explain how dioxin exerts its toxic effects, says toxicologist John Doull of the University of Kansas, an SAB member.

Other board members say EPA also ignored data that fail to support its conclusion that dioxin is harmful to human health. For instance, the assessment highlights three abnormalities—small testes, decreased testosterone levels, and decreased insulin levels—found among Air Force pilots exposed to high dioxin levels in Agent Orange during the Vietnam War. But the EPA report neglects to mention other results from these studies—such as a lack of elevated cancer risk—that suggest the pilots are just as healthy as people exposed to background levels of dioxin, says SAB member Michael Gough, a microbial geneticist at the Office of Technology Assessment.

EPA scientists say the panel's criticisms will require only minor tinkering with the document. "They're not telling us we need new data," says EPA dioxin toxicologist Linda Birnbaum, who expects to bring a new version to the SAB by early 1996. "We need to clean it up and document our conclusions better," she says.

Others, however, say EPA must change its approach or face another dressing down from the SAB. "EPA tried to put a nice face on it, but the SAB really kicked them in the gut," says a respected scientist who testified before the board on behalf of industry. Adds Gough: "I'll be surprised if EPA comes back with a document that says dioxin is likely to cause health effects at near-background exposure levels."

–Richard Stone

CONSERVATION

Report Backs Endangered Species Act

This week, as Congress began to debate whether or not the Endangered Species Act should be allowed to go extinct, the National Academy of Sciences came out with a plea for the law's survival. On 24 May, the Academy's operating arm, the National Research Council (NRC), released "Science and the Endangered Species Act," a document arguing that the law's approach to protecting endangered species is scientifically sound and that additional programs, setting aside vital habitats, are needed to improve the odds for threatened organisms.

The act has come under fire from conservatives and property-owners, who argue that it not only infringes on property rights by restricting development but is ineffective, as it saves few species (*Science*, 3 March, p. 1256). But the NRC panel that wrote the report gives the act high marks. "We think by and large that the act is a good piece of legislation and that it does serve a very major purpose in biological conservation," says Michael T. Clegg, the University of California, Riverside, population geneticist who chaired the committee. He adds: "It is well grounded in science."

Restricting human activity in the habitats of endangered creatures—one of the act's key provisions—is necessary to set the stage for recovery, the report asserts. Among other success stories, the report cites the California condor and the Oregon silver-spot butterfly, although the panel declined to quantify the overall success or failure of the law.

The report also defends controversial decisions to use the act to protect not just species, but also subspecies and even isolated populations. That's justified, says William L. Fink, a panel member from the University of Michigan, Ann Arbor, because in the context of the law "species" refers to a collection of individuals that together has the potential to evolve and survive—a "species-in-the-making." Limiting it to some textbook definition of species would ensure a higher extinction rate than now exists.

The NRC panel does suggest improvements in the act's implementation. Designating a "critical habitat" for a species' survival is a protracted process during which endangered populations can be further depleted, so the panel calls for immediate establishment of smaller, interim habitats until larger areas can be secured. It also advises federal agencies to use new models of ecosystem dynamics, developed since the act was written in 1973, to better estimate the risks of extinction under varying conditions. Finally, because it would be more efficient to "save" species by protecting entire ecosystems, the report calls for additional biodiversity management programs, although it stops short of calling for more legislation.

Whether anyone will heed this advice is uncertain. Congressional staffer Elizabeth Megginson, who is coordinating a Congressional task force that is reviewing the law, points out that the political winds are blowing against the act. She says that she has heard hundreds of complaints about the act from property-owners across the country. She is not sure if the NRC report adequately addresses those concerns or whether this gathering of scientific opinion will have any influence on her task force's own report, expected out next month.

Panel members, such as Duke University wildlife biologist Lynn A. Maguire, are not optimistic. She notes that Congress recently ignored the NRC's advice about wetlands legislation (*Science*, 19 May, p. 970). Presumably this was because the report "didn't lend support to the decision [Congress] wanted to make," she says.

–Elizabeth Pennisi

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