

2,4,5-T: The heat goes on

The recent developments in the 2,4,5-T controversy make only one thing clear: The issue is still hazy after all these years.

The issue took root about 15 years ago when the first questions concerning possible adverse health effects of 2,4,5-T use surfaced. Eventually, the controversy focused on the herbicide's unavoidable contaminant, TCDD — a chemical that causes birth defects in animals. Although often referred to as "dioxin," TCDD is really just one kind of dioxin — a family of compounds with similar structures but different toxicities. TCDD made its first major media splash in 1976 when 1.7 kilograms of it escaped in a vast chemical cloud over Seveso, Italy, after an explosion at the ICMESA chemical plant. Then, in 1978, veterans began attributing their illnesses to the TCDD-contaminated Agent Orange — the potent herbicide used during the 1960s to defoliate the Vietnamese countryside. Finally, in 1979, women near Alsea, Ore., said that an increased incidence of miscarriages followed TCDD-contaminated 2,4,5-T spraying of nearby forests. The Alsea incident provided the grounds for the U. S. Environmental Protection Agency's emergency suspension (and proposed permanent suspension) of 2,4,5-T use on rights of way (railways and near power lines, for example), forests and pastures.

Public hearings required for the proposed permanent suspension have been underway since March 1980. Several weeks ago, however, EPA asked Administrative Law Judge Edward B. Finch to recess those hearings so the agency could begin negotiating an out-of-court settlement with Dow Chemical Co. — manufacturer of 2,4,5-T. More recently, the two parties requested the recess be extended to May 12.

Coincidentally, this recess extension ends shortly before an Agent Orange conference — organized by the National Veterans Task Force on Agent Orange — convenes at American University in Washington. In addition to organizing such information-disseminating conferences, the task force encourages veterans to seek testing, treatment and compensation for illnesses they believe were caused by exposure to Agent Orange.

Another public interest group involved in the 2,4,5-T controversy is the American Council on Science and Health — billed as "a nonprofit consumer education association." ACSH — which last September began accepting financial support from food, pharmaceutical and chemical industries — hosted last week in Washington a press conference that included the economic aspects of the 2,4,5-T issue. Clearing timber brush, for example, costs \$55 an acre with herbicide and from \$550 to \$800 an acre if hand-cleared, said ACSH con-

sultant Richard Main. Based on herbicide economics and its literature review of the health effects of 2,4,5-T, "ACSH recommends that the current uses of 2,4,5-T in rice fields and rangeland be continued and the suspended uses in forests, railways and highways, and landscaping be reinstated."

Meanwhile, researchers continue to add to the literature on the health effects of 2,4,5-T. The most recent addition is a study published in the April 17 *SCIENCE* by Jennifer A. Hanify and colleagues of the Northland Births Survey in Auckland 1, New Zealand. Hanify and co-workers compared the Northland New Zealand birth defect rate between January 1960 and August 1966 — a period of no aerial 2,4,5-T spraying — to the rate between September 1972 and August 1977 — a period of spraying. While the study results indicate no association between central nervous system birth defects and spraying, a statistically significant association between spraying and the incidence of congenital talipes, or foot deformities, was established. "Whether this association indicates a causal relation remains to be established," the New Zealand researchers said.

The U. S. resolution of the 2,4,5-T issue based on such studies also remains to be seen, and the international herbicide picture provides no predictive pattern: A British pesticide committee recently gave 2,4,5-T a clean bill of health, for example, while Finland and Sweden banned its use.

How can such diverse regulations result from the same data base? "Toxicology is not an exact science so there is latitude for interpretation of what the risks are," says Chemical Industry Institute of Toxicology president Robert A. Neal, who last autumn chaired the 2,4,5-T case study included in the National Academy of Sciences' symposium in Washington on The Role of Scientific Information in Decision-Making. In addition, he says, sticking to "objective science" in the highly subjective 2,4,5-T issue continues to be difficult. "It still is as emotionally charged and highly politicized as it was 15 years ago," Neal says. "The 2,4,5-T issue has not changed." □

Behavior problems and biochemicals

It is time for medical and mental health professionals to look more carefully at the biochemical factors that are related to childhood learning disorders, hyperactivity and the development of criminal tendencies.

That was the message of Alexander G. Schauss, director of the American Institute for Biosocial Research in Tacoma, Wash., to the Fifth National Conference on Child Abuse, which convened this month in Milwaukee, Wis. Research indicates that some children have biochemical "profiles" that are susceptible to nourishment de-

ficiencies, food additives and environmental chemicals. For example, Schauss cites three factors at work in childhood hyperactivity: copper poisoning in the blood, an imbalance of magnesium and phosphorus in body tissues and allergic responses to food. "About 90 percent of the clients we've seen at our institute have had one of these three problems," Schauss told *SCIENCE NEWS*.

Behavior problems have also been observed among school children who have been exposed to high levels of lead. Automobile exhaust and the consumption of heavily leaded flakes of paint from slum dwellings have been implicated in these cases. Schauss adds that a recent study revealed that 46 percent of a group of psychiatric patients had undiagnosed medical problems that were related to their psychiatric symptoms. Among the physical problems were lead intoxication and vitamin or other dietary deficiencies (*SN*: 10/11/80, p. 233).

"We need to do larger, more scientific studies to clarify these ... effects," says Schauss. "But physiological and biochemical problems should at least be ruled out before we look elsewhere for causes." □

Smoking and sperm

Men who smoke tobacco are more likely than nonsmokers to produce abnormal sperm, say H. J. Evans of Western General Hospital in Edinburgh, Scotland, and his colleagues in the March 21 *LANCET*. Abnormal sperm in turn may lead to infertility or cause birth defects.

Evans and his co-workers carefully matched sperm samples from a group of 43 cigarette smokers and 43 nonsmokers attending an infertility clinic and compared the samples for abnormalities in shape, such as being too large, too small, having multiple heads or multiple tails or being immature. They found a significantly greater proportion of abnormal sperm among the smokers than among the nonsmokers, confirming findings reported in a German medical journal in 1969. Unlike that study, the group was unable to link abnormalities with cigarette amount.

The researchers do not discuss the possibility that abnormally shaped sperm might have contributed to some of the infertility problems among the men they studied, but studies have shown that in some cases infertile men produced only abnormal round-headed sperm (*SN*: 5/20/78, p. 333). It is also possible that irregularly shaped sperm can cause birth defects. There is evidence, for instance, that the shape of sperm reflects their genetic content (*SN*: 5/20/78, p. 333). Also, men with cystic fibrosis, a genetic disease, have abnormally shaped sperm (*SN*: 5/20/78, p. 333), and at least one study found an increased rate of perinatal deaths and birth defects among the progeny of men who smoke tobacco. □