

Dow Redefines Word It Doesn't Like

Teratogenicity is an unpopular word at the Dow Chemical Company. Ever since the thalidomide tragedy, the public has reserved a particular horror for any chemical suspected of causing congenital malformations. Recently Dow has had the misfortune to have one of its best selling herbicides, 2,4,5-T, found teratogenic by scientists working under contract to the federal government. The discovery eventually led to the cancellation of certain uses of 2,4,5-T by the Environmental Protection Agency.

Suspicion of teratogenicity was also cast on a related herbicide, 2,4-D. The original study indicated that 2,4-D is teratogenic in mice and a more recent experiment, by K. S. Khera and W. P. McKinley, indicates that it also causes fetal abnormalities in rats. Dow scientists decided to repeat the Khera-McKinley experiment, but, unfortunately for Dow and 2,4-D, got similar results. So they published a paper saying that 2,4-D is not teratogenic. How can a teratogenic substance not be teratogenic? Easy—you redefine teratogenesis.

Teratogenic means the property of causing any kind of congenital malformation in the fetus. Naturally there are differences of opinion as to what constitutes an abnormality and what is within the limits of normal variation. But that apart, there is broad general agreement as to what the word means.

The Dow chemists—B. A. Schwetz, G. L. Sparschu, and P. J. Gehring—have redefined teratogenicity as “that degree of embryotoxicity which seriously interferes with normal development or survival of the offspring” [*Food and Cosmetics Toxicology* 9, 801 (1971)]. This means that none of the minor deformities caused by 2,4-D in rat fetuses—such as underweight, subcutaneous swelling, delayed formation of bone, and the growth of ribs in the lumbar region—count as terata, and therefore Dow's fast selling weed-killer is not teratogenic, according to Dow's definition. Even a chemical that caused a highly disfiguring deformity would not be considered teratogenic by the Dow chemists unless it “seriously interfered with” development or survival.

Although there might be a scientific case to be made for tightening up the definition of teratogenesis, this is not the reason for the Dow scientists' attempt to refashion the English language. Public relations is the motive. B. A. Schwetz, leader of the Dow team, explained to *Science*, “If you tell congressmen or laymen or housewives that a compound is teratogenic they would think that here is something very serious that we should not be exposed to. Every compound labeled teratogenic, they assume, must be as bad as thalidomide.” The Dow redefinition, Schwetz said, is intended to remedy this unfortunate reaction or, as he put it, “Out of this will come an attempt to inform the general public that teratogenicity is not teratogenicity, if you see what I mean. There are degrees of teratogenicity.”

In fairness to the Dow chemists, several of the specific deformities caused by their herbicide might not be considered evidence of teratogenesis, even under the usual definition. Delayed ossification, for example, is not abnormal if it is only delayed. But lumbar ribs, also caused by 2,4-D, is a teratogenic effect. Two leading authorities consulted by *Science*, J. Warkany of the Cincinnati Children's Hospital and Clarke Fraser of the McGill Department of Genetics, Montreal, said they disagreed with the proposed new definition. “There's no need to redefine the word—why mess around?” said Fraser.

Redefining words to suit the convenience of a special interest group can have untoward consequences—indeed George Orwell wrote a book about them. But perhaps there is something to what the Dow chemists propose. If teratogenesis is to be sanitized and put out of common use by reserving the word only for thalidomide-type disasters, then perhaps the same might be done for Dow, a word which, in many people's minds, is associated with the manufacture of napalm.—N.W.

As it turns out, “government contact work” is not entirely new to the ACS. During the past year or so, several society officials have been quietly plugging for federal support of internships in government and private laboratories as a stop-gap means of alleviating scientific unemployment. In March 1971, last year's ACS president, Nobelist Melvin Calvin, suggested two such programs to the President's science adviser, Edward E. David, Jr. In September, the White House announced the initiation of a \$3 million internship project to provide jobs in federal labs for 400 to 500 unemployed scientists and engineers.

This year, the ACS is asking the Labor Department, the National Science Foundation, and science adviser David to establish a special intern program for up to 1500 jobless chemists and chemical engineers. The ACS plan would have the government paying part of the salaries of the interns, who would work in industrial labs. According to a proposal it made last month, the ACS would administer this program.

A similar concept is embodied in a bill called the Scientific Manpower Act of 1972 (H.R. 14298), introduced on 11 April by Representative Ronald V. Dellums (D-Calif.). Modeled after a bill introduced in the California Assembly last year at the behest of American Chemical Society's California sections, the Dellums measure would set up an Office of Scientific Manpower in the Labor Department to administer stipends of up to \$700 a month for unemployed scientists, who would work in excess federal laboratory space. By no coincidence, Dellums comes from Alan Nixon's hometown of Berkeley.

One might reasonably ask at this point why an organization with a \$30.3 million annual operating budget finds it necessary to buttonhole its members for an extra few hundred thousand dollars to pay for an emergency job program. The answer seems to be that the ACS has already trimmed away all the budgetary fat it could find, and even then it rang up a \$707,000 deficit last year. (Reserves from a recent dues hike apparently more than offset the loss.)

Insofar as its finances are concerned, the ACS is first and foremost a publishing house. It produces 17 journals, plus *Chemical Abstracts*, a series of monographs, three series of books, educational aids, films, and a radio program. Like the rest of the publishing industry, the ACS is caught in a tight squeeze