

Bringing down the giant

For 30 years, DDT, dichlorodiphenyl-trichloroethane, has protected crops, killed disease-bearing insects and in general has contributed to the health and well-being of millions of people throughout the world.

But since the 1950's, critics concerned about its biological and ecological effects have whittled away at it, until last week a decision by Health, Education and Welfare Secretary Robert H. Finch finally brought the giant down. Together with the Secretaries of Agriculture and the Interior, Finch banned the use of DDT in the United States by 1971 except where "essential to the preservation of human health and welfare."

Finch did not specify the percentage by which DDT would be reduced, but he indicated that it could range from 40 to 90 percent. He also disclosed that he was going after other persistent pesticides, such as aldrin, dieldrin and endrin, and those containing lead and mercury.

Actually, DDT will not be sorely missed in the U.S. In recent years a slew of pesticides have been gradually easing it out of the picture. The pesticides, largely organophosphates and carbamates, do not have the drawbacks of long persistency and accumulation in fat tissue that DDT has.

Finch's ban, which also included DDD, a relative of DDT having one less chlorine atom, came about because of recommendations made by the secretary's Commission on Pesticides (SN: 5/3, p. 423) headed by Dr. Emil Mrak, chancellor emeritus of the University of California at Davis. The commission itself was set up in the spring because of the excessive concentrations of DDT found then in coho salmon.

But its recommendations were based on accumulated evidence in the areas of carcinogenesis (cancer production), teratogenesis (birth defects), mutagenesis (inheritable genetic changes) and drug-pesticide interactions.

The commission regards the most significant of its findings to be in the area of carcinogenesis.

"Some pesticides (in mouse experiments) have led, in large doses, to increases in tumors of the liver, lymph glands and lungs," says Dr. Ian A. Mitchell, assistant director of the National Cancer Institute and a member of the Mrak commission.

He points out that of the 110 pesticides studied, chlorinated compounds, of which DDT is one, were prominent in carcinogenesis. "The doses were very large," he emphasizes, with each pesticide tested on 72 to 80 mice.

As for teratogenic effects, commission cochairman Dr. William J. Darby of Vanderbilt University noted that one weed killer—a chlorinated compound related to DDT—under proper conditions of pregnancy injured mouse fetuses.

Dr. Darby points out that the effects of drug-pesticide interactions were caused by enzyme changes. A drug, for example, could stimulate or inhibit an enzyme's production, leading to the increase or decrease of pesticide residues in the body.

The weakest area, as far as concrete evidence was concerned, was mutagenesis. Dr. Albert C. Kolbye, staff director of the commission, reports that "no pesticide has been found mutagenic," but other chemical agents similar in action to some pesticides have produced positive effects in laboratory tests. Dr. Kolbye cautions about extrapolating to man, adding, "Much testing needs to be done. Knowing that chemicals can have positive effects is reason to explore this field thoroughly."

The report insists that there was no real evidence of damage to man. "The data available relate only to experimental animals or lower forms of life," it says. "At the present time, we do not know whether or not such results are

applicable to man."

Dr. L. Eugene Cronin, director of the Natural Resources Institute at the University of Maryland, points out that it was only "within the last two years that really conclusive evidence was obtained in ecology." He cites numerous instances such as declining bird populations among hawks, eagles and the peregrine falcon (SN: 2/22, p. 189), thin egg shells that cracked when incubated by the mother (SN: 1/11, p. 41), parents eating their young and increased pesticide concentration in higher animals.

Unlike these creatures, DDT is not threatened with extinction. Besides the continued, limited uses to be allowed, most of the DDT manufactured in the United States is sent abroad, where it will continue to be used because the danger from malaria is seen as a far greater threat than a 12-parts-per-million concentration of DDT in the body.

"Since the bulk goes overseas, it is unlikely that the ban will have too great an effect," says a spokesman for the National Agricultural Chemicals Association. He is backed up by Dr. M. G. Candau, director general of the World Health Organization. "If it is easy for certain countries to stop using DDT," he says, "it is practically impossible for other countries to do so." □

BAHAMA PLATFORM

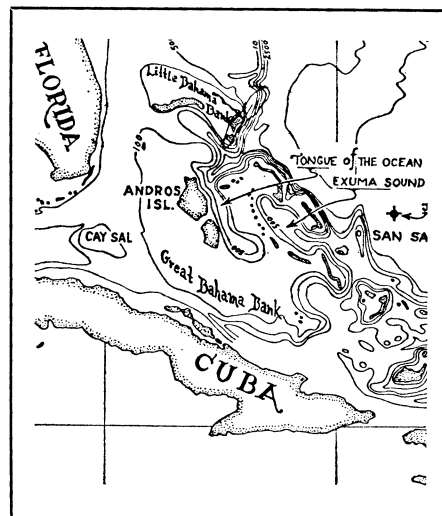
Origin of an obstacle

For years marine geologists have been intrigued by the huge foot-shaped, mostly underwater plateau jutting southeast from Florida known as the Bahama platform.

The origin of this elevated region of half a million square kilometers, extending from the Grand Bahama Islands to a point just north of the Dominican Republic, has been more than a mystery; it has been one of the major remaining obstacles to a clean topographical fit of Africa, North America and South America before continental drifting—now a widely accepted theory—began.

"The Bahamas-Blake region has always been an embarrassment to the drift theory," notes Dr. Robert Dietz of the Environmental Science Service Administration's Atlantic Oceanographic and Meteorological Laboratories in Miami. The Bahama platform spoiled the fit, overlapping onto Africa. As a result, says Dr. Dietz, many geologists "arbitrarily omitted the Bahamas from their fit, but the logic for doing so was left unspecified."

The most common explanation for the platform is that it was once a part of the North American continent that somehow broke off and sank. But this



R. S. Dietz

Bahama platform from a cookie mold.

idea presented difficulties.

That it could have been built from scratch by natural processes seemed also unlikely, until Drs. Dietz, John C. Holden and Walter P. Sproll developed a model that might explain such a phenomenon. Their explanation fits, rather than confounds, continental drift theory, giving it additional credibility.

The Bahama platform, they sug-