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Persistent Pesticides

Controversy over pesticides is heating up. Michigan and Arizona have banned the use of DDT, and, beginning in 1970, Sweden will restrict its application. Secretary Finch has appointed a commission to tell the government what to do about it, and the Food and Drug Administration has seized shipments of coho salmon containing DDT or its derivatives at concentrations of more than 5 parts per million.

Few man-made chemicals have had as profound an effect on human lives as DDT has had. It has been instrumental in saving many millions of lives, in part through control of insect vectors, in part through increased food production. The quality of many crops has been improved greatly through its use, and in some instances yields have more than doubled. Were the United States to stop the use of all pesticides, food prices would rise sharply and supplies of many foods would be inadequate. Although some people might prefer banning all pesticides, the real issues are the choice of pesticides (for example, persistent or nonpersistent) and the conditions under which they are to be used. In this controversy, some agriculturalists and industrial interests defend the application of persistent chemicals such as the chlorinated hydrocarbons—DDT, dieldrin, endrin, and others. Conservationists and many members of the concerned public advocate the use of nonpersistent chemicals such as the carbamates or the phospho-organics—for example, malathion. The defenders of persistent chemicals point to their effectiveness and low cost. DDT is a relatively inexpensive chemical, and one or two applications may suffice for a season. Much of the cost of using pesticides arises from the labor involved in applying them. Hence, complete abandonment of the chlorinated hydrocarbons now would result in a substantial increase in the nation's food bill.

The defenders of DDT point to the remarkable fact that in 3 decades of use there has been no documented instance in which human deaths have resulted from proper application of the chemical, and relatively few deaths have occurred even with drastically improper use. Moreover, DDT and its relatives are not truly persistent but are slowly destroyed in soil. DDT is slowly degraded in man, and it is also excreted, so that concentrations do not build up indefinitely. Typical human fat contains DDT and its degradation products at concentrations on the order of 12 parts per million.

An undesirable property of the chlorinated hydrocarbons is that they are somewhat volatile and may be carried far from the point of application. Residues of DDT have been found in seals and penguins in Antarctica. When a farmer in Europe applies the chemical to his crops, some of the molecules are destined to accumulate in you and me.

Part of the current concern about DDT is due to new biological findings in animals other than man. Among the effects demonstrated have been an interference with shell deposition in some birds and an estrogenic stimulus in rats by a component of commercial DDT. Highly controversial is a report, soon to be released, that describes carcinogenic effects of large amounts of DDT in tumor-susceptible mice. Most scientists would agree that use of DDT should be curtailed, and indeed consumption of DDT in the United States has been declining; during the 1967 crop season only half as much was applied as in the peak year of 1959. However, use in other countries is increasing.

Suppression of the application of chlorinated hydrocarbons will not end controversy over pesticides. Unanticipated, possibly dangerous, side effects of the new substitutes will be discovered. Conservationists will continue to criticize, and that will be useful, for all of us have a large stake in the quality of the environment.—PHILIP H. ABELSON