

Pesticide Discovery and Testing Costly, Dow Scientists Report

An explosion in requirement, coupled with an explosion in technology, has added dramatically to the costs and time devoted to toxicological studies needed for pesticide development, say two scientists from Dow Chemical, U.S.A.

According to Dr. P. J. Gehring, director of toxicology, these costs are "at the expense of pesticide manufacturers and therefore ultimately to the consumer."

In a paper presented to the American Chemical Society he said that he hoped unnecessarily restrictive demands would not "develop into being at the expense of the food supply of the nation and the world as well."

Improved technology does not always result in the replacement of outdated techniques for toxicological evaluation, he said. New methods often are required in addition to rather than in place of older types of evaluation. This has added to the problem, rather than simplifying or speeding results. He said that some standard clinical procedures are still required, although they have long ago been shown to be poor indicators of a particular type of response needed for toxicological evaluation of pesticides.

Requirements for toxicological studies on pesticide compounds in relation to cost and time have climbed from a modest \$10,000 and a 30 to 90 day time period in the early Fifties to an investment of up to \$700,000 and a time period exceeding four years.

According to Gehring, three factors have served to influence the more rigorous and extensive toxicity testing: increased sensitivity of analytical methods which provide a better measurement of tissue residues, new techniques of increased sensitivity to monitor toxicological parameters, and the increased awareness of the impact of pesticides on non-target organisms.

He suggests that the methods of interpreting test data have not kept pace with the development of techniques. Some tests such as those involving massive dosages may yield positive test results but little information. Striking results attract attention, he said, but do not necessarily contribute to scientific knowledge.

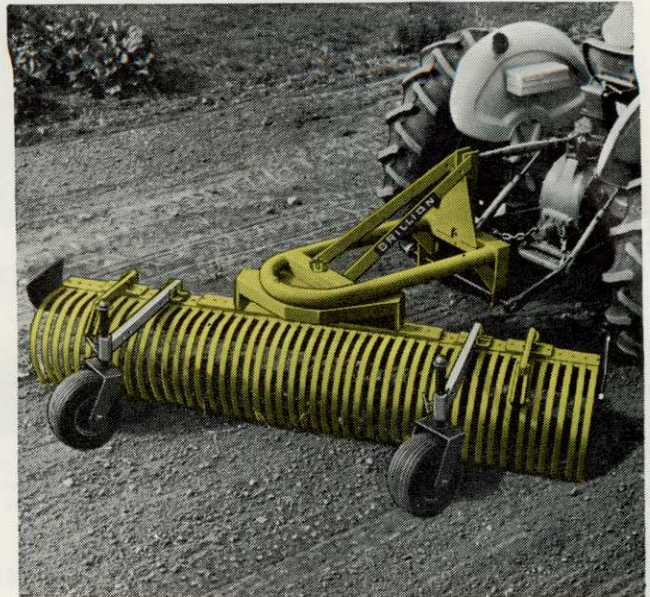
Dr. E. H. Blair, director of research and development for the Ag-Organics Department of Dow, then detailed the steps leading from the initial screening of compounds for biological activity to the eventual marketing of a material as a new pesticide.

One new pesticide emerges for every 10,000 compounds tested, said Blair. The time from discovery to market can be 10 years and the cost for a new pesticide is in excess of \$10 million. Those are the odds in the pesticide development game.

Using 1956 as a base year, he said that research and development costs had risen by 245 percent in 1964 and had escalated 340 percent by 1969. He indicated that costs are continuing to climb because of pressure for more extensive toxicological and other testing combined with current high money costs and general levels of inflation.

He pointed out that a successfully developed new product, a "winner," must ultimately bear the costs of the research work done in support of a material eventually abandoned at some stage in research. He said the challenge facing the pesticide industry today is to identify and eliminate the "losers" early. Frequently, the "losers" of today can be associated in some manner with toxicology, metabolism, analytical or ecological factors which make them unsuitable for further development.

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