PESTICIDES:
Risk-Benefit Ratio

"Man can no longer enjoy the luxury of avoiding things toxic to his environment. Scientists must face reality and evaluate the risk-benefit ratio of pesticides and other compounds more realistically than we have in the past." Thus did Dr. Dale R. Lindsay of the Food and Drug Administration charge scientists at Michigan State University's Symposium on Pesticides in Soil.

Most toxicology research includes the use of very high rates of compounds on very sensitive animals, he points out. "Under these conditions, scientists are almost always able to show some detrimental effects." The tendency is to interpret these experiments to mean that the compounds are always going to be detrimental to the health of man, he says. "But this is not always the case.

"There are no toxic chemicals, just toxic uses of them. Even table salt can kill you, if you use too much of it." In cleaning up the environment, Dr. Lindsay says, new, potentially hazardous compounds should be banned whenever feasible before they become widely used. However, he adds, "We should expect to continue using some potentially harmful compounds because their benefits far outweigh their detrimental effects."

For example, DDT is still the best material for controlling malaria mosquitoes in underdeveloped countries, he says. Use of DDT should be continued, because the potential danger of DDT in these areas is small, while the malaria hazard is high.

Dr. Lindsay urged large-scale "mega-mouse" experiments over long periods of time to really evaluate the risk-benefit problem as it relates to man. "This problem has more significance to man than his ability to explore space," he says, "and I doubt that it will cost nearly as much."

Another scientist who asks for reason in the face of the current emotional antiagricultural chemical campaign is Dr. C. R. Harris, head of the soils and pesticides section of the Canadian Agriculture Department's research institute. Substitution of new "nonpersistent" pesticides may compound the pollution problem rather than ease it, he notes.

These materials are, in most instances, broad-spectrum poisons that stay in the soil for a moderate length of time, he explains. Most are more soluble in water than the insecticides they replace, he says, thus increasing the risk of contaminating water.

Also, Dr. Harris adds, "a few of these new materials for use as soil insecticides appear to be as persistent in the soil as DDT or dieldrin. Although restrictions on the use of the old insecticides, such as DDT, are well justified, they should not be haphazardly replaced with materials which may have equally serious environmental side effects."

Research at MSU
Tagging path of insecticides

CHEMICALS:
The Prices Go Up

Pointing to mounting costs as the culprit, chemical makers last week were busily posting higher price tags on a host of organic chemicals. And they were doing so in the face of increasing pressure from Washington on both labor and management to hold the line on wages and prices or face the possibility of the Federal Government's imposing mandatory controls.

Among the key chemicals caught up in the last round of price increases were styrene, phenol, aspirin, ethylene glycol, and solvents. The prices of plastics, nitrogen fertilizer solutions, and some inorganics have also been raised since changes can be made in second-quarter 1970 contract prices.

Dow Chemical and Union Carbide posted the broadest array of new organic prices. In so doing, the companies apparently have adopted a practice started by Shell Chemical of inaugurating price hikes on a broad sweep of chemicals at one time. And the companies say more price increases are on the way. "We are reacting to the fact that we can't handle 6 or 7% inflation a year," a Dow spokesman says about the increases.

J. B. St. Clair, president of Shell Chemical, says his firm raised the price of more than 50 organic chemicals by 6.5% after making a comprehensive study of the steady upward trend in the cost of product manufacture, distribution, and customer service. In increasing prices on low-density polyethylene resins, Carbide says that, "While significant improvements in manufacturing efficiency were achieved during the 1960's, the rate of technological advance has not been enough to offset the general rate of inflation during the past few years."

There is little doubt that the chemical industry hasn't fared as well as others in passing on higher costs by price increases to its customers. According to the Department of Labor, the chemical industry wholesale price index stood at 99.1% of its 1957–59 base in January. This compares with an index for all commodities of 116.0.

Union Carbide first advanced prices of 14 chemicals and low-density polyethylene resins. The Carbide increases affected a number of solvents and industrial alcohols.

Dow increased prices on 14 groups of organic chemicals involving 54 products. Most of the increases range from 0.5 to 2 cents a pound.

Other organic chemicals that now list for higher prices include phenolic molding compounds, alkyds, and polyester resins. Conoco Chemicals raised the prices of its linear alcohols, ethoxylates, and ether sulfates.

Gulf Oil has increased the price of nitrogen fertilizer solutions and Allied Chemical posts an increase of $5.00 per ton nitrogen effective April 1 on anhydrous ammonia.

R&D:
Independent Boondoggle

Sen. William Proxmire (D.-Wis.) takes a dim view of federal expenditures for independent R&D. It's a "billion-dollar boondoggle," Sen. Proxmire charged last week, adding that he was "flabbergasted" when he found out that the Department of Defense was picking up the tab for $685 million and the National Aeronautics and Space Administration $131 million a year for independent R&D.

Independent R&D is R&D carried on by firms under contract to the Government, is paid for in large measure by the Government, but is unrelated to the work agreed to under the contract and is conducted at the discretion of the contractor.

Not only is federal support of independent R&D improper and unauthorized, said the leadoff witness at hearings before Sen. Thomas J. McIntyre's (D.-N.H.) Ad Hoc Research and Development Subcommittee, but under the provisions of Section 203 of the 1970 Military Procurement

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Sen. Proxmire
Flabbergasted at R&D tag

Authorization Act—the Mansfield Amendment—it's illegal.

Last fall Sen. Proxmire introduced and later dropped a Mansfield-like amendment to the 1970 Military Procurement Authorization Act. The amendment would have prohibited DOD funding of contractor-initiated research unrelated to work being performed under contract. It has since been reconstituted as a bill—S. 3003.

Meanwhile, Rep. Emilio Q. Daddario (D.-Conn.), chairman of the House Subcommittee on Science, Research, and Development, testified before the House Armed Services Investigating Subcommittee on the Pentagon's independent R&D policies. Rep. Daddario observed that some charge that there is too much duplication in R&D projects because of a lack of coordination and evaluation.

Some have proposed that the Defense Documentation Center establish a data bank on independent R&D activities, he said, to coordinate various programs and prevent unnecessary duplication of effort. Rep. Daddario does not believe the Defense Documentation Center is the proper repository for such data. The Science Information Exchange (SIE), administered by the Smithsonian Institution, he said, would be a more logical place because SIE is supposed to have technical and fiscal information on all research grants and contracts directly supported by the Government as well as on certain nonfederal activities.

Rep. Daddario said that a General Accounting Office report to Congress on independent R&D contained one alternative to the present system that gives him "great cause for concern." The alternative would restrict defense support of research in almost precisely the same language as the Mansfield amendment. He added that should this restrictive policy be implemented for independent R&D, it would apply not only to DOD but to NASA and the Atomic Energy Commission as well. Indeed, the logical extension would be to prevent any mission agency from performing research that did not have a direct and apparent relationship to its mission.

THE SUN:
Measuring an Eclipse

Just before 9 A.M. EST last Saturday, the greatest show on earth opened to an audience of tens of millions—a total solar eclipse. More than just a nature spectacular, the solar eclipse offered scientists an opportunity for a wide variety of observations over a wide terrain. Moving eastward from the Pacific, the 80- to 90-mile-wide total shadow passed over central Mexico and Florida, and then up the East Coast and out to sea.

Scientists exploited the solar eclipse to carry out a multitude of observations and experiments, from the heights of central Mexico's mountains (spectroscopic studies of the sun's corona) to the depths of Georgia's (and Pogo's) vast Okefenokee Swamp (studies of the reactions of animals to the sudden darkness).

However, perhaps the most intensive studies were carried out from Wallops Island, Va., where NASA launched more than 30 sounding rockets in an "unprecedented" attempt to study the earth's atmosphere and the sun, with many observations possible only during an eclipse. Four of the rockets were lofted into the upper atmosphere for the first high-resolution ozone measurements made before, during, and after an eclipse.

A group led by E. Hilsenrath of Goddard Space Flight Center determined ozone concentration as a function of altitude, using a chemiluminescent ozone detector. Ozone reacts chemically with Rhodamine-B dye absorbed on porous Vycor, and a photometer measures the luminescence produced. Rate constants for the formation and decomposition of ozone in the atmosphere are determined from changes in ozone concentration with time in the presence and absence of the sun's catalyzing UV radiation. The workers can also tell whether water vapor and other constituents play a role in ozone chemical processes.

Another set of measurements, studying chemical changes and ionization processes in the thermosphere—75 to 200 miles above earth—was carried out by L. H. Brace and N. W. Spencer of Goddard Space Flight Center, G. R. Carignan of University of Michigan, and Dr. J. C. G. Walker of Yale University. Two rocket launchings bearing multipurpose probes enabled them to make observations at four degrees of darkness. A Bennett RF ion mass spectrometer measured the number and kind of ions and their changes with time during the eclipse.

Pittsburgh Conference: More Emphasis on Leasing

If lack of research and development funds has lowered spending and cut back on meeting attendance in some areas, it wasn't immediately apparent in Cleveland last week at the Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy. By midweek, registration stood at 5437, up comfortably from 4986 at the same point in 1969. And a number of instrument advances marked the equipment exposition—perhaps more than in the past couple of years. One sign of the times, however, was a greater emphasis on instrument leasing.

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