



Project Summary

Proceedings: National Workshop on Pesticide Waste Disposal, Denver, Colorado, January 28-29, 1985

The National Workshop on Pesticide Waste Disposal was held in Denver, Colorado, on January 28-29, 1985. This broadly scoped workshop was jointly sponsored by the American Chemical Society's Division of Pesticide Chemistry, the American Farm Bureau Federation, the American Society of Agricultural Engineers, the Association of American Pesticide Control Officials, Inc., the National Alliance of Independent Crop Consultants, the National Forest Products Association, the U.S. Department of Agriculture, and the U.S. Environmental Protection Agency's Office of Research and Development and Office of Pesticide Programs. The primary objective of this workshop was to provide a national forum for assembled pesticide users, pesticide producers, federal and state agencies, and agricultural and environmental researchers to address collectively the complex issue of pesticide waste disposal and to serve as a basis for continued dialogue and interaction. The proceedings of the workshop reflect the two primary points of this gathering: the status of EPA's pesticide and hazardous waste regulations and the efforts of government, academia, and industry to address effectively the ramifications of these regulations. Special sessions of the workshop were devoted to applicator disposal needs and to federal/state pesticide regulatory requirements. Additional sessions were concerned with various disposal technology options. These proceedings contain 20 papers that report on the problems and solutions of pesticide waste disposal.

This Project Summary was developed by EPA's Hazardous Waste Engineering

Research Laboratory, Cincinnati, OH, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

After opening remarks and a welcome from John G. Welles, the U.S. Environmental Protection Agency (EPA) Regional Administrator for Region VIII, Orlo R. Ehart of the Wisconsin Department of Agriculture's Trade and Consumer Protection Division presented an overview that set the tone for the day-and-a-half workshop. Mr. Ehart discussed the need for a major agreement that balanced both legal and technical concerns and addressed the difficulties and costs of the proper disposal of pesticide wastes.

Since many of the attendees were pesticide applicators, the workshop was structured to give them an opportunity to express their specific disposal needs. William T. Keane, the moderator of a panel of commercial applicators for this session, described the state-of-the-art of mechanical technology available to applicators as being inadequate for compliance with the Resource Conservation and Recovery Act (RCRA). Pesticide waste disposal perspectives were discussed by commercial aerial and ground applicators as well as by a private applicator concerned with on-the-farm disposal problems.

Raymond F. Krueger of the Office of Pesticide Programs, U.S. EPA, provided a brief summary of the federal regulation of pesticide disposal. Mr. Krueger discussed the two federal laws administered by EPA: the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Resource Conservation and Recovery Act



(RCRA). Uncertainties of pesticide users reflect a lack of understanding concerning these two legislative acts. This lack is particularly evident with RCRA because of its comprehensiveness and most recent amendments. This paper introduced the pesticide user to those parts of FIFRA and RCRA relating to management of pesticide-containing wastes that might be generated during pesticide use. John Masterman of the State of California Department of Health Services explained how California and other states may impose pesticide waste regulations in addition to those issued by the federal government. This paper emphasized that cleanup costs and potential civil and criminal penalties are usually so great that the long-term cost of improper management far exceeds any short-term savings that may be realized.

Dr. Philip C. Kearney of the Agricultural Research Service, U.S. Department of Agriculture (USDA), presented a paper entitled "Pesticide Degradation Properties." This paper explained the large number of compounds whose persistence and mobility in the environment are simultaneously their most useful properties and those of greatest concern. Dr. Kearney concluded the morning's special sessions with an expression of concern for the economics of disposal, which he considered to be a major issue along with the persistence and mobility patterns of the most widely used herbicides and insecticides.

The workshop continued with papers reviewing the various approaches to the disposal of pesticide wastes with emphasis on system descriptions, costs, waste types, environmental and health considerations, regulatory constraints, and the advantages and disadvantages of each technology option. Various physical, biological, and chemical technology options were discussed and compared with traditional treatment and disposal scenarios. Descriptions were made of a two-stage adsorption, filtration, and/or coagulation treatment system that was developed to remove pesticides from contaminated wastewaters, and of a treatment system based on recirculation of pesticide-contaminated wastewater through a bed of granular activated carbon. Biological methods using microorganisms to destroy chemicals or metabolize pesticides were also discussed along with options to dilute pesticides for disposal. This treatment technology was addressed from the perspective of the applicator, whose needs are to find simple, inexpensive, and environmentally

safe methods for pesticide waste disposal that comply with federal and state regulations. The chemical treatment options presented for pesticide waste disposal addressed detoxification and chemical destruction through the use of oxidative, reductive, hydrolytic, and/or catalytic reagents. Other methods of degrading pesticides were microwave plasma destruction, photolysis, hydrolysis, ozonation, wet-air oxidation, chemical fixation, and reductive degradation.

The land application options available to pesticide waste generators of a pesticide rinsate focused on land treatment units, landfills, and surface impoundments. One presentation covered acceptable disposal techniques, some of RCRA's related requirements, and reuse of pesticide rinsate. A paper on incineration options summarized EPA's tests of high-temperature incinerators with an overview of their typical waste destruction performance. Few technical limitations are envisioned in incinerating most organic agricultural pesticides or their combustible containers because of the successful experience with thermal destruction technologies.

After the papers on disposal technologies, a discussion was held on storage, handling, and shipment of waste pesticides under federal law. This topic included the identification and classification of waste pesticides, notification requirements, the pretransport requirements, the Uniform Hazardous Waste Manifest, recordkeeping, reporting, and the farmer exemption. The transporter's perspective was provided in a paper covering the operation of the transfer station, the type of company that would be likely to operate the station, and the transportation requirements.

Pesticide container management, which includes recycling, reuse, and disposal of empty pesticide containers, was the final issue of the workshop. Presentations included the discussion of the Alberta, Canada's province-wide container collection and disposal system and Maine's returnable pesticides container program.

The workshop concluded with a panel summarizing the program. Panel members representing the USEPA, USDA, academia, and industry provided remarks and answers to questions through a structured system designed to allow their inclusion in the proceedings.

These proceedings are published so that the material presented at this workshop can benefit as many people as possible who express an interest in solutions to the problems inherent in

pesticide waste disposal. Before the workshop was concluded, planning began for a 1986 National Workshop on Pesticide Waste Disposal which will build on the information contained in the full report. These proceedings contain the presentations made by representatives of various EPA regulatory and research groups, USDA, academia, and the pesticide industry and thus document the first venture of the Workshop Committee in working toward environmentally sound and practical solutions for pesticide waste disposal.

The full report was submitted in fulfillment of Contract 68-03-3131 by JACA Corporation under the sponsorship of the U.S. Environmental Protection Agency.

This Project Summary was prepared by staff of JACA Corporation, Fort Washington, PA 19034.

James S. Bridges is the EPA Project Officer (see below).

The complete report, entitled "Proceedings: National Workshop on Pesticide Waste Disposal, Denver, Colorado, January 28-29, 1985," (Order No. PB 86-

119 898/AS; Cost: \$16.95, subject to change) will be available only from:

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