Introduction

The Seventh ASTM Symposium on Pesticide Formulations and Application Systems, sponsored by ASTM Committee E-35 on Pesticides and its Subcommittee E35.22 on Pesticide Formulation and Application Systems, was held on 5–6 November 1986 in Phoenix, Arizona. A major goal of these symposia has been to provide an open forum for academic, government, private, and industrial scientists to present research papers and exchange ideas covering broad areas of pesticide use. Since their inception in 1980, interest and participation in these symposia have grown. At the seventh symposium, upon which this book is based, significant technical advances were presented by researchers from a broad range of technical disciplines.

Pesticide formulation and pesticide application are complex technical areas. Singular scientific disciplines are inadequate. The need for an open forum to review and update advances in these areas was correctly perceived by those who initiated the ASTM symposia. The broad range of topics covered in this book and the number of scientific disciplines represented by the authors demonstrate that the seventh symposium has met this need.

This book contains seven sections. The opening section, Perspective, provides an introduction to ASTM Committee E-35 on Pesticides, its Subcommittee E35.22 on Pesticide Formulation and Application Systems, and the origins of the ASTM pesticide symposia. It is hoped that readers will gain increased awareness and interest in ASTM and become involved in the standardization efforts of Committee E-35.

Subsequent sections are on Closed Mixing, Handling, and Application Systems; Formulations; Application Research; Application Methods; Granules; and Registration. These papers provide state-of-the-art technical information on pesticide application, pesticide formulation, and registration considerations.

Information presented at a special session on closed mixing and handling transfer systems is given in Section Two. Norman B. Akesson, Professor Emeritus, University of California, Davis, organized the session and has here provided some introductory remarks. These papers provide a comprehensive review of all aspects of closed systems for handling pesticides.

The third section describes formulations research. Topics covered are emulsifier selection, the role of emulsifiers in formulations, and the formulation of a product. An emulsifier component selection system was described for optimizing the nonionic emulsifier component of emulsifiable concentrate formulations to achieve tank mix compatibility with solid formulations. The addition of fatty acid methyl esters to vegetable oil-based crop oils reduced viscosity, lowered the freezing point, and improved solvency for emulsifier components. Successful formulation of a product was achieved by incorporation of a freezing point depressant.

Developments in application research and methods are contained in Sections Four and Five. Areas of research are systematic examination of the entire dose transfer process, relationships between formulation parameters and drop size, controlled droplet size, electrostatic spray system, estimating efficacy of microbial insecticide, and evaluation of spray penetration into carpet. Unique application methods were described for wicking of herbi-

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cides, dry application of water-dispersible granules, root control in sewer lines, and mass delousing of humans. These sections present a stimulating view of current research. This research is essential to maximize the efficacy of pesticides through improvements in application technology.

Section Six deals with granular pesticide formulations. Formulation of granules by compression and evaluation of granule attrition tests were reviewed. Compression processing is well established in industry but relatively new in formulation of pesticide granules. ASTM E 728 is a test method for evaluating granule attrition. Data from this test were compared with attrition data from metering granules through various types of granular applicators.

Section Seven provides information on registration of formulations. Technical and procedural aspects of registration were discussed.

Throughout the symposium, a healthy exchange of information occurred between the audience and speakers. Enthusiastic and approving comments were received following the symposium. These responses attest to the need for, and the success of, an interdisciplinary forum.

This book will be a useful reference for anyone involved in formulation, manufacture, distribution, application, and registration of pesticides. It is hoped that the ideas presented here can serve as a catalyst to new ideas and continued technical advancement in all aspects of pesticide formulation, application, and efficacy.

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