

# **Pesticide Formulations and Application Systems**

## **20th Volume**

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**STP 1400**

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***Pesticide Formulations  
and Application Systems:  
Twentieth Volume***

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and Jane C. Mueninghoff, editors*

ASTM Stock Number: STP1400



ASTM  
100 Barr Harbor Drive  
PO Box C700  
West Conshohocken, PA 19428-2959

Printed in the U.S.A.

**ISBN: 0-8031-2877-0**

**ISSN: 1040-1695**

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# Foreword

This publication, *Pesticide Formulations and Application Systems: Twentieth Volume*, contains papers presented at the 20th symposium on Pesticide Formulations and Application Systems held in New Orleans, Louisiana on 26-27, October 1999. ASTM Committee E35 on Pesticides and its sub-committee E35.22 on Pesticide Formulation and Application Systems sponsored the symposium. Alan Viets, Bayer Corporation, Agriculture Division, R. Scott Tann, Exxon Chemical Company, and Jane C. Mueninghoff, Huntsman Corporation co-chaired the symposium and are co-editors of the resulting publication.

# Overview

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The 20th Symposium on Pesticide Formulations and Application Systems held in New Orleans on October 26-27 included 25 papers and presentations. This year we changed the traditional format. Up to 20 minutes were allowed for each presentation and 5 additional minutes for questions. 15 of the authors were able to publish in this Special Technical Publication (STP).

Our keynote speaker from EPA, Marcia Mulkey spoke about "The Introduction of Tolerance Fees." Her presentation helped show the impact that implementation of the "Food Quality Protection Act" (FQPA) is having on formulation development. The currently used "inerts" (surfactants, dispersants, solvents, carriers, etc.) that are the tools of the formulation chemists require data review. EPA needs to collect a Tolerance Fee to review the data. Unfortunately, the data requirements were not yet clearly defined. When more than one company produces the same surfactant, for example, there was no system in place to determine how much each company pays. Additionally, EPA had not yet determined how to use the data to satisfy the FQPA requirements. This topic will likely be around for several years.

The main symposium was broken into 6 sessions. Two of the sessions have not always been present in past symposiums. They were Methods in which test methods are the real purpose of ASTM subcommittee E35.22 and Safety and Toxicology.

*Regulatory Issues*—As has been the case for several years the impact of regulatory issues on the formulations chemist's job continues to increase. Two excellent presentations from this session are included in this STP, Warren Stickle's paper "Implementation of the Food Quality Protection Act (FQPA): An Analysis" and Ralph Magin's paper "Chemical Descriptors—An Approach to Codify the EPA Inerts Exempt List (40 CFR 180.1001)." These provide first, an industrial view of how FQPA implementation is proceeding and secondly describe a cooperative effort between CPDA and EPA to simplify the task of finding out if an "inert" is approved for use in a pesticide application. Both papers can help the pesticide formulation chemist wade through some of the regulatory issues.

*Application and Spray Drift*—These topics in some form have been the topic of papers in every symposium since 1979. The session includes papers by Dexter and Hewitt et al. on water based application and droplet formation, as well as physical measurements of the liquid's properties that impact the droplet formation.

*Methods*—ASTM and cooperative groups used this new session to present papers discussing the development of new methods. Two methods developed by ASTM to characterize tank mix adjuvant functionality were presented. Published in this STP is a paper by Greg Volgas about the development of a test to simulate spreading of applied pesticides on the leaf surface of plants and one by Goss et al. on assay variance in a granular formulation. Karl Jaeger from the German methods development group (DAPF) analogous to ASTM E35.22, presented a paper describing the development of a multipurpose suspension in water test method CIPAC MT 180.

*Efficacy*—In this session two papers discussed factors influencing biological efficacy of pesticides. Both are published in this STP. The first was presented by Peter Baur of Germany and the second by John Roberts of the USA.

*Safety and Toxicology*—In this session Bruce Jarnot presented a paper explaining the required toxicology data for EPA approval of a new pesticide formulation component for general use. Published in this STP is a paper on the production plant safety decision system, "Correlation Between

Formulation Properties and Safety Measures for a Dry Product Mixing and Milling Facility,” by Hans Klusacek of Germany.

*New or Improved Formulation Approaches*—The last session included 7 papers, 6 of which are included in this STP by authors Nalewaja et al., Delli Colli and Doering, Dookhith, Levy et al., and Sexton et al. As is true of the Application and Drift session, these topics have always been covered in the 20 symposiums. The papers primarily dealt with how to develop better formulations with either the right components or the right process. Curtis Elsik et al. prepared a good example paper titled “Physical Properties and Use of Branched Alcohol Ethoxylates in Agricultural Formulations.”

### The First 20 Years of ASTM E35.22 Symposiums

Since the first symposium on Pesticide Formulations and Application Systems, there have been many changes in the pesticide industry. The original ASTM E35.22 consisted of several large and middle-sized chemical companies that synthesized pesticide molecules, universities investigating primarily application technology, and a few “inert” suppliers. Inert ingredients are components other than pesticide molecules in pesticide formulations. Today’s E35.22 consists of several prominent inert suppliers, some combination contract formulators and pesticide distributors, adjuvant suppliers for spray tank addition and a few large and middle-sized chemical companies that synthesize pesticide molecules.

Now only a few universities participate in the symposium. No university participates in the methods writing group. Due to multiple consolidations, the number of chemical companies synthesizing pesticide molecules has dropped substantially, as reflected in the number of members in the Agricultural Crop Protection Association (ACPA). As a result of these changes, the topic of the papers has changed and the number of papers at our symposiums has gone down.

On the other hand, cooperation between E35.22 and the other similar groups in the world has improved. Cooperation with CIPAC (Collaborative International Pesticides Analytical Council Limited) and DAPF (German working group on Pesticide Formulations) has increased significantly since 1995. CIPAC is the group that writes test methods to collect data required for pesticide registration in many countries of the world. ASTM E35.22 is participating in the CIPAC meetings. EPA sometimes recommends CIPAC methods for required registration data collection here in the USA.

The DAPF group is lead by a member of the BBA (German equivalent of the USDA) with formulation chemist members from the pesticide industry. The DAPF group writes most of the physical test methods for CIPAC. With the help of DAPF, ASTM is working towards a mutual recognition of test methods with CIPAC. ASTM methods are reviewed every 5 years, while some CIPAC methods are old and need to be revised. The DAPF group has begun to review and revise the old CIPAC methods. The results of this effort to be presented at the CIPAC meeting in Spain in 2000 should make ASTM and CIPAC more compatible. This year, for the second time, a member of the DAPF group presented a paper at the ASTM E35.22 symposium helping to strengthen the cooperation.

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