



List of Symposia by Topic Area
254th ACS National Meeting & Exposition
August 20-24, 2017, Washington DC, USA
Chemistry's Impact on the Global Economy

Each year, in addition to our traditional award/tribute symposia, the AGRO Division programs specific symposia in most, but not all, of our standing programming areas. Presentations for those standing program areas not included in listed symposia will be grouped in AGRO's general poster session.

Awards and Tributes Symposia

- Advances in Insecticide Mode of Action, Chemistry, and Resistance: ACS International Award for Research in Agrochemicals, Symposium Honoring Dr. Jeffrey Bloomquist (oral invitation only, posters contributed)
- Bob Krieger Memorial Symposium: A Life of Pesticide Research
- Richard Allen Memorial Symposium: A Passion for Pesticide Fate in the Environment
- Sterling Hendricks Memorial Lectureship Award: John Pickett
- Kenneth A. Spencer Award for Outstanding Achievement in Agricultural and Food Chemistry: Bruce German (AGFD host)

Special Topics

- Communicating Pesticide Science to the Public

General Session

- Protection of Agricultural Productivity, Public Health and the Environment (posters only)

Standing Programming

Advances in Agrochemical Residue, Analytical and Metabolism Chemistry, and Metabolomics

- Advanced Techniques for Isolation and Identification of Ag/Pharma Metabolites from Biological Samples
- Advances in Residue Analytical Methods: Innovation, Current Status, and Future Prospects
- Emerging Mass Spectrometry Trends in Support of Agricultural Research and Development
- Encountering Challenges in Analysis of Small Polar Metabolites
- Good Laboratory Practices for the Agrochemical Professional
- Qualitative and Quantitative Endogenous Protein Detection
- Residue Analytical Method Transfer from Initial Method Development to End Use

Agrochemical Toxicology and Mode of Action

- Advances in Insecticide Mode of Action, Chemistry, and Resistance: ACS International Award for Research in Agrochemicals, Symposium Honoring Dr. Jeffrey Bloomquist (oral invitation only, posters contributed)

Air Quality and Agriculture

- Agricultural Atmospheric Emissions: Processes, Impacts, and Management
- Atmospheric Fate and Transport of Pesticide Emissions

Biorationale Pesticides, Natural Products, Pheromones, and Chemical Signaling in Agriculture

- Roles of Natural Products as Biorational Pesticides in Agriculture

Discovery and Synthesis

- Synthesis and Chemistry of Agrochemicals

Ecosystem and Human Health/Exposure and Risk Assessment

- 2,4-D Human Exposure Data – Lessons from Decades of Study
- Application of Spatial Technologies to Advance Exposure Modeling and Risk Assessments
- Current Regulatory and Scientific Landscape of Mixture Toxicity and Risk Assessment
- Developing Pesticide Environmental Risk Assessment Approaches
- Higher Tier Lab/Field Approach on Risk Assessment Refinement
- How Can Chemistry Improve the Human Health Exposure and Risk Assessment of Chemicals?
- Pesticides, Pollinator Health, and Agricultural Sustainability
- Risk Assessment and Beyond: Innovative Approaches to Meet FIFRA and ESA Consultation Needs
- Species Habitat Determination and Chemical Exposure Routes and Timing
- Tiered Testing for Pollinator Protection: Experiences in Design, Implementation, and Interpretation

Environmental Fate, Transport, and Modeling of Agriculturally-related Chemicals

- Environmental Fate, Transport, and Modeling of Agriculturally-related Chemicals
- Fate and Metabolism of Agrochemicals – Early Career Scientist Symposium
- Mechanistic Modeling and Effectiveness of Buffer Strips for Pesticide Regulatory Frameworks

Formulations and Application

- Agrochemical Formulation Development
- Breaking the Tension: Surfactant Use in Agrochemical Products

Human and Animal Health Protection: Vector Control, Veterinary Pharmaceutical, Antimicrobial, and Worker Protection Products

- Biorational Control of Medical and Veterinary Pests
- Veterinary Drugs: Research, Residues, and Regulations

Regulations, Harmonization, and MRLs

- Analytical, Environmental, and Regulatory Challenges with Legalized Cannabis
- Anatomy of a Label: What's Chemistry Got To Do With It?
- Managing Pesticide Use and Use Data
- Pesticide Registration, Monitoring, and Enforcement: The Big Picture



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2,4-D Human Exposure Data - Lessons from Decades of Study

Purpose of Symposium

2,4-Dichlorophenoxyacetic acid is one of the most widely-used herbicides in the world, playing a key role for weed management in agriculture, range and pasture, forestry, urban settings, and aquatic environments. We now have 50 years of environmental data and 20 years of biomonitoring data on 2,4-D. This important data set provides a picture of human exposures to herbicide under a broad range of conditions and from an wide array of media. However, the available data are of varying internal quality and generalizability, and therefore, care must be taken in considering the utility of these studies for risk assessment purposes. It is important to examine carefully the wealth of available human exposure data for 2,4-D in order to explore such aspects as temporal changes in media analyzed, study quality, and populations assessed.

The symposium will focus on the strengths of the 2,4-D exposure data, the challenges associated with interpreting those data, and the importance of this kind of examination for understanding human exposures. This topic is consequential as these data may be used to support policy decisions and regulatory actions in the US and internationally.

This important and multi-disciplinary topic should be of interest to risk assessors, chemists, exposure scientists, epidemiologists, and regulators, as well as to the ENVR Division of ACS and other professional societies such as ISES, ISEE, and SRA.

Suggested Topics

- What do we know about 2,4-D exposures?
- How to judge the quality of exposure data for epidemiology and risk assessment
- Quality of published 2,4-D data over time
- Comparison of published 2,4-D data to national databases: lessons learned
- Uncertainties and variability in 2,4-D data: What is needed
- Sources of exposure from biomonitoring studies
- Why quality matters now more than ever
- Use of exposure data in epidemiology
- Challenges associated with global products vs. different regional label systems

For further information, contact the organizers

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***Advanced Techniques for Isolation and Identification of
Ag/Pharma Metabolites from Biological Samples***

Purpose of Symposium

The purpose of the symposium is to bring together international experts on isolation and identification of the metabolites of agricultural and pharmaceutical chemical products for scientific dialogue and knowledge exchange. Metabolism of agricultural and pharmaceutical products is a vital part of product registration and stewardship. The efforts undertaken to isolate and to identify these metabolites are complex, frustrating, and ever evolving.

Please join this symposium to provide your technical knowledge, experience, and/or regulatory insight on this exciting and challenging area of chemical research. Techniques to present include, but not limited to, are fraction collection, SPE/clean-up, mass spectrometry, NMR, TLC, SFC, 2D-HPLC, radioactive detection and co-chromatography.

Regulators of agriculture and pharmaceutical chemical products are encouraged to attend as well to provide guidance on what they view as acceptable science for metabolite identification. The symposium is a cross ACS Division symposium due to the importance of analytical techniques for metabolite isolation and identification. Members of the Division of Analytical Chemistry are encouraged to submit papers on this topic.

Suggested Topics

- Isolation of chemicals/metabolites from complex matrices
- Tracking techniques for chemicals/metabolites through environments and organisms
- Identification of chemical/metabolites by various advanced liquid chromatography and mass spectrometry techniques
- Identification of chemicals/metabolites, particularly trace amounts, by nuclear magnetic resonance spectroscopy
- Perspectives and thoughts of regulators on metabolite levels requiring identification within environmental fate and metabolism studies
- Viewpoints and considerations of regulators on acceptable metabolite identification techniques
- Techniques for tracking and identification of chemicals/metabolites from environments and organisms without the use of a radioactive label

For further information, contact the organizers

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Advances in Insecticide Mode of Action, Chemistry, and Resistance

ACS International Award for Research in Agrochemicals

Symposium Honoring Dr. Jeffrey Bloomquist

Financially Sponsored by DuPont Crop Protection

Purpose of Symposium

This award symposium is being organized to honor Dr. Jeffrey Bloomquist of the University of Florida and the 2017 recipient of the ACS International Award for Research in Agrochemicals. Speakers of significant scientific achievement in the field of insecticide toxicology will be invited to present in the multisession symposium. Topics will cover a broad range in the area of insecticide toxicology and chemistry, with emphasis that will include mechanisms of resistance in mosquitoes and its circumvention by new chemistries. Information will be relevant to vector borne disease which is of current pressing concern both in the US and internationally.

Poster contributions are also being sought in all areas of insecticide toxicology, chemistry, resistance, and mode of action.

Other potentially interested divisions include AGFD and TOXI.

Suggested Topics

- Insecticide mode of action
- Attractant and repellent mode of action
- New Insecticidal chemistry
- Mechanisms of resistance to insecticides
- Monitoring extent and level of resistance

For further information, contact the organizer

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***Advances in Residue Analytical Methods:
Innovation, Current Status, and Future Prospects***

Purpose of Symposium

Development of analytical methods used in residue analysis is becoming more challenging as guidelines require more sensitive and selective methods with lower limits of quantitation. But, these methods must concomitantly meet the requirements of rapidly changing global safety assessments for both the consumer and the environment.

Thus, this symposium will focus on recent advances in analytical method development and innovative methods which meet these challenges of new global guideline requirements. This symposium will initiate a dialogue about approaches to developing methods, guideline requirements, and analytical innovation to provide cost-effective, high throughput and high quality methods of analysis with expanded analytical scope. Representatives from industry, academia, and government are invited to share their perspective on analytical method development and validation approaches.

This symposium will also encourage discussion and debate about different approaches to provide analytical data for global safety assessments. Other ACS divisions which may benefit from this symposium are ANYL, ENVR, and AGFD.

Suggested Topics

- Streamlining method development – application of new technologies
- Challenging analytical methods – successes and failures, i.e., problem-solving in unusual matrices or unique molecular properties of analytes
- Development of methods in complex matrices, e.g., bee matrices and body-fluid methods
- Development or implementation of method automation for routine analysis
- Utilization of new technology in residue analytical method, i.e., Selex Ion, Flow injection method and Dart MS/MS
- Multi-residue methods for residue analysis – advantages and limitation
- Extractability for residue methods

For further information, contact the organizers

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Agricultural Atmospheric Emissions: Processes, Impacts, and Management

Purpose of Symposium

Agricultural production can release a wide variety of potential pollutants to the atmosphere. For example, crop residue burning has been widely used to control insects, weeds, and other pests, or clear fields emitting volatile organic compounds (VOCs), particulate matter (PM), and nitrogen oxides (NO_x). Animal production also releases VOCs, PM, methane, and ammonia. Emissions from crop production include pesticides, PM, and greenhouse gases.

These materials can undergo complex chemical and physical interactions with each other and with other species in the environment. They can also be transferred from one environmental compartment to another. All these processes can affect the fate and transport of agricultural emissions. However, quantifying these processes and impacts requires a multi-media, multi-pollutant, and multi-disciplinary approach. Effective management of these emissions requires an in-depth understanding of the complex processes and impacts, and collaboration among academia, industry, and government agencies in addition to the producers.

This symposium seeks to bring together people from different disciplines in academia, industry, and government agencies, and fosters future research linking interconnected areas. The linked research can help address a range of complex agricultural, environmental, and societal issues that are impacted by the management of agricultural systems. This symposium may be of interest to other ACS Divisions such as ENVR and AGFD.

Suggested Topics

- Emissions from agricultural activities including animal and crop production
- Fate of agricultural emissions
- Exchange of agricultural emissions among different compartments
- Transformation of agricultural emissions
- Impacts of agricultural emissions on ecosystems
- Short and long range transport of agricultural emissions
- Management and mitigation of agricultural emissions
- Regulatory concerns

For further information, contact the organizers

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Agrochemical Formulation Development

Purpose of Symposium

Advances in the formulation science of crop protection and plant nutrition chemicals can provide improvements in bioefficacy, uptake, compatibility, and the physical stability of formulations. Formulators must utilize creative chemistry solutions to complement specific requirements for active ingredients, tank mixtures, local regulations, plant genetics, and geographical features. In addition, methods for evaluating formulation processing and stability are necessary to save time on R&D and predict failure modes in real-world situations.

This symposium will highlight the approaches of the agrochemical industry to provide agrochemical formulation solutions that can be adopted worldwide and will be of high interest to both industry and academic scientists who research agrochemicals and their applications.

With new and changing technological tactics and issues external to the industry (demand for sustainable technologies, changing regulatory environment, resistance, extreme weather, etc.), it is an intriguing time to explore ways that we can design products to meet the needs of a more populated and prosperous world. Therefore, we also invite those traditionally affiliated with AGFD, COLL, ENVR, or ORGN whose technologies are in non-crop applications to exchange perspectives between industries.

Suggested Topics

- Innovative surfactant and dispersant tools for formulations
- Green agrochemical formulations and biopesticides
- Synergies and challenges in multi-a.i. ag formulations
- Methods for evaluation of formulation stability
- Adjuvant technologies for efficient uptake/translocation
- Field studies of novel formulations
- RNAi-based formulation development and testing
- Particle size effects in ag formulations including nanotechnology for ag formulations
- Regulatory issues for formulations, including environmental fate and metabolism
- Seed coating formulation development
- Formulations for plant nutrition enhancement

For further information, contact the organizer

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Analytical, Environmental, and Regulatory Challenges with Legalized Cannabis

Purpose of Symposium

The goal of this session is two-fold: (1) to initiate a discussion on the analytical, environmental, and regulatory challenges associated with agrochemicals in the legal cannabis industry; and (2) to address challenges associated with management operations in the face of conflicting State and Federal Laws.

Cannabis production and sale are legal in a limited number of States, but are still prohibited under federal law. The contrasting laws introduce additional challenges regarding the use and application of agrochemicals, cannabis production byproducts, water consumption, and waste discharges within the boundaries of the Clean Water Act (CWA), the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), the Federal Food, Drug and Cosmetic Act (FFDCA) and other federally legislated rules and regulations. The presenters in this session will share their thoughts and research on the following (and/or related) topics as they relate to the legal production of cannabis:

Suggested Topics

- Dissipation rates of pesticides on crops grown indoors, compared to outdoors
- Analytical methods for determining pesticides in cannabis
- Analytical considerations to assess cannabis product quality and consumer label compliance.
- Metals and other contaminant/adulterant determinations in cannabis
- Policy related issues for pesticide use on cannabis
- Policy issues for use of cannabis production byproducts in food and animal feed.
- State perspectives – medical and recreational use of cannabis and pesticides
- Potential federal policy needs in a future nationally legalized cannabis world.
- Studies on hemp and pesticide use
- Hemp – research to support the re-establishment of industrial hemp production
- Water consumption in cannabis production and Clean Water Act
- Waste and waste water discharges
- State and Federal Regulations that govern the use of agrochemicals, water use and waste discharge

For further information, contact the organizers

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Anatomy of a Label: What's Chemistry Got to Do with It?

Purpose of Symposium

A key tool for regulating agrochemicals is the label that appears on the final plant protection product. This symposium aims to explain how the application of chemistry and good science can promote development of the labels of the future which support safe and effective product use.

This symposium will delve into the science and data that is needed to generate plant protection product labels and will cover: analytical science, chemical analysis, mammalian toxicology, ecotoxicology, environmental fate, crop residues, and more. Often, large amounts of data are distilled down to just a single key statement or signal word. How are these data generated, analyzed, and categorized until finally appearing on product labels?

This symposium will also aim to answer: What is the impact of chemistry on label language? How can this influence the use of products? How do regulators make decisions that affect product labels and how is this enforced?

This symposium will appeal to a wide, international audience: of regulators, industry, academia, and CROs across many sectors. Other ACS Divisions that might be interested include ANYL and ENVR. The regulation of agrochemicals is a hot topic, and the venue of this meeting, i.e., Washington DC which is the location of US EPA headquarters, makes it a perfect opportunity to focus on the regulation of agrochemical products via labels.

Suggested Topics

- Formulation science – how the product is chosen/formulated/key considerations and analytical tools
- Biology behind selecting which crops appear on labels
- Environmental fate and water monitoring
- Hazard categories, toxicity testing, and first aid statements
- How does human health and environmental risk assessment affect labels?
- EPA's Smart Label Project (electronic labels)
- How are labels currently categorized (e.g., Section 18, 24c, 2ee, etc) and regulated?
- Label development "best practices"
- Developing practical, yet enforceable, labeling restrictions
- How can label restrictions protect our honeybees and other livestock?
- Product stewardship programs and the benefits they bring
- Labeling and endangered species protections, ESPP bulletins
- Challenges associated with global products vs. different regional label systems

For further information, contact the organizers

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***Application of Spatial Technologies to Advance
Exposure Modeling and Risk Assessments***

Purpose of Symposium

With an increased availability of high-resolution spatial and temporal data and new technologies, the risk assessment of agricultural chemicals, such as pesticides, veterinary medicines, and nutrients, is becoming increasingly refined and more complex.

Although the availability of data and the quality of data increases, many challenges remain. For example, temporal changes across the landscape provide uncertainty in use patterns of chemicals and the distribution of species. Routing of chemicals in riverine systems provide ample challenges as stream flow information is often not readily available for key locations where problems may arise. The impact of the spatial and temporal variability of rainfall across the landscape remains a topic of discussion.

This symposium is aimed at modelers, risk assessors, land use managers, and scientists applying spatial technologies to refine approaches to exposure and risk assessment at the field, watershed, regional, and country level.

Suggested Topics

- Distributed modeling of agrochemicals across the landscape
- Routing of contaminants in surface waters
- Advancements and updates of spatial data
- Novel approaches of integrating models and landscape
- Mapping of areas vulnerable to agrochemicals
- Spatial-temporal aspects of modeling
- Spatial variability of rainfall
- Species habitat modeling and risk assessment
- Impact of buffers on exposure, risk, agricultural economics

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Atmospheric Fate and Transport of Pesticide Emissions

Purpose of Symposium

This symposium will facilitate the discussions among scientists in the agricultural and environmental related fields to examine:

- a) Emerging issues in environmental fate and exposure modeling and risk assessment of airborne emissions from semi-volatile and volatile agrochemicals;
- b) Emerging issues in environmental fate and exposure modeling and risk assessment of physical drift from pesticide spray applications and planting of treated seeds;
- c) Field- and lab-based drift and volatilization studies in risk assessments, e.g., endangered species, bystander, and operator;
- d) Study designs and methodologies for assessing risk of airborne pesticides.

The symposium will provide a platform for interactions between academia, industry, and regulatory experts from agricultural and environmental related disciplines. In addition, it will enhance the understanding of the environmental behavior of the ambient agricultural chemical emissions from various perspectives. This symposium is open for collaboration with other divisions such as ENVR and ANYL.

Suggested Topics

- Developments in higher-tiered environmental fate and exposure modeling
- New techniques in air residue analyses
- New techniques in assessing toxicity from airborne pesticides
- Advances in environmental exposure and risk assessment of agrochemicals
- Long-range transport of volatilized pesticide emissions
- Methodologies and techniques for determining set-back/buffer distances

For further information, contact the organizers

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Biorational Control of Medical and Veterinary Pests

Purpose of Symposium

With the recent encroachment of important disease pathogens vectored by a variety of arthropods, such as zika virus, dengue virus, and chikungunya virus, it is more important than ever to be continually looking toward the future of insect control techniques. As wild insect populations continue to become resistant to classical synthetic insecticides, novel chemistries and approaches need to be rapidly developed, characterized, and deployed. In order for these control techniques to be successful, subjects including insect pest biology, biochemistry, genetics, semiochemicals, and synthetic chemistry need to be explored.

This symposium will highlight some of the most prominent research currently exploring novel control techniques for medical and veterinary insects and ticks. The symposium will highlight the most important disease epidemics spread by insect disease vectors in our global society. Contributors will discuss the importance of characterizing biochemical targets and pest biology for the development of repellents, insecticides, and novel technologies aimed at controlling future vector populations.

Suggested Topics

- Current epidemics and the state of vector control
- Insect-host interactions and preventing the bite
- Overcoming insecticide resistance
- Novel control approaches
- Bringing new products to market

For further information, contact the organizers

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***Bob Krieger Memorial Symposium:
A Life of Pesticide Research***

Purpose of Symposium

The purpose of this symposium is to honor the research of Dr. Robert (Bob) Krieger. Bob passed away on July 26, 2016. He led a long life in pesticide research beginning with his Ph.D. from Cornell University. From there, he held positions at University of California-Davis, Cal EPA, and University of California-Riverside, as well as many others. He received many distinguished awards for his research in toxicology, entomology, and agrochemicals.

Bob's pesticide research was diverse and included testing the fate and effects on chemicals in multiple organisms. Later, his focus was on pesticide exposure and risk assessment, studying methods for determination of exposure from surfaces and due to occupational exposure. He was also on the editorial board for several handbooks and journals.

Finally, he was an inspiring teacher and mentor to more than thirty graduate students, most of whom are active in ACS today. Bob's students, post-docs, and collaborators are especially encouraged to submit abstracts.

Suggested Topics

- Understanding pesticide metabolism using insect cytochrome P450 from insect microsomes
- Influences of gut enzymes on pesticides
- Biomonitoring and personal chemical exposure
- Transfer of pesticide residues from pet products
- Transfer and bioavailability of indoor pesticides
- Pesticide toxicology
- Risk assessments in the regulatory process
-

For further information, contact the organizers

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Breaking the Tension: Surfactant Use in Agrochemical Products

Purpose of Symposium

Surfactants have been used for several decades in industrial, pharmaceutical, agricultural, cosmetic, and house-hold cleaning applications. In agriculture, surfactants are used in plant protection formulations to increase the uptake of active ingredients via the plant cuticle or to reduce the drift of volatile pesticides. This allows for the reduced amount of active substance used per treated area, while maintaining a high level of control. Although there has been a long history of surfactant use in many consumer products, recently the safety of surfactants in agricultural applications has been debated by regulators and industry.

This symposium will provide a platform for communication about innovative surfactant technologies for agrochemical products and safety assessment approaches that comprise the regulatory frameworks. Government, academic, and industry researchers are encouraged to share the unique perspectives from their sector or highlight outcomes of collaborations or working groups. Other ACS divisions that may benefit from this symposium are ANYL, ENVR, and AGFD.

Suggested Topics

- Value of surfactants in agricultural products, including innovative surfactant technologies for agrochemical products, environmentally friendly surfactants, and drift reduction agents (DRA)
- Regulatory strategies to gain inert tolerance exemptions for surfactants used in pesticides
- Design and execution of human and environmental safety assessment studies for exposure to surfactants
- Strategies for evaluating the human and dietary exposure to surfactants from agrochemical products
- Environmental study design for surfactants to register in different geographies
- Innovative formulation development using surfactants

For further information, contact the organizers

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Communicating Pesticide Science to the Public

Purpose of Symposium

The symposium will focus upon communicating pesticide science to non-scientific audiences, especially consumers who perceive there might be a risk of pesticide residues in their food. Pesticide science is complex and risk communication is at best an emotionally charged topic. The typical consumer does not have the time or desire to understand all of the regulatory science behind the food they buy, but they expect the EPA to evaluate pesticides and ensure the public and environment will not be harmed. EPA is spending more and more time conducting thorough assessments; communicating the benefits of pesticide use is beyond their charge. Who should be communicating the necessity of pesticides and promoting the benefits of pesticide use? Perhaps it falls upon the agrochemical industry to address the need for pesticides and allay the public's concerns in a credible manner.

Pesticide registration is a highly-regulated, science-driven process involving experts from many disciplines within the private sector, government and academia. Explaining and communicating the science of pesticide toxicity, exposure, and risk in response to negative public perception is a burdensome task, not just for pesticide manufacturers, but often for regulatory agencies such as EPA. If pesticides and GMO crops are the essential tools to combat pests and diseases, control weeds, and enhance crop yields, then much better communication of the benefits versus the risks is needed for the public. Experts from academia, governmental authorities, pesticide and food industries, and non-governmental organizations will be brought together to present and discuss their views and observations.

Suggested Topics

- Who are the stakeholders in pesticide communication and what are their objectives?
- Who is best to translate science into common language?
- Why do farmers use pesticides? Can we grow crops without chemicals?
- What does risk/benefit mean?
- Are organic foods less risky for the consumer?
- What are the rules that US EPA follows when assessing pesticide risk?
- How do we protect the environment from pesticides and support agriculture at the same time?
- Do other regulatory agencies register pesticides the same way as EPA?
- What is the best way to determine if a pesticide will not harm the consumer and/or environment?
- Where can the public obtain scientifically-valid, yet easy-to-understand information about pesticides?
- How do we simplify scientific jargon for effective communications to the public?
- Education and the world of pesticide science.
- What should future communications to the public concerning pesticides look like?

For further information, contact the organizers

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***Current Regulatory and Scientific Landscape of
Mixture Toxicity and Risk Assessment***

Purpose of Symposium

Mixtures can elicit adverse responses of non-target species below the threshold effect concentrations of one or more of the individual components of the mixture. These potential combined effects and identifying the best approaches to evaluating their potential impact is an active research area, particularly in the agricultural sector. Various additivity models and types of mixtures exist and, assuming a one-size-fits-all approach, may under- or over-estimate potential effects.

During this symposium, research relating to various data assumptions, experimental designs, data quality evaluations, additivity models, along with their use in evaluation of risk to non-target organisms, will be discussed. Other key topics of interest include addressing greater-than-additive effects in the context of risk assessment, assessing combined toxicity from tank mixtures, assessing metabolites, and cumulative risk, as well as other regulatory issues and concerns.

Scientific outcomes from this session will include recommendations to address key regulatory issues in the area of mixtures, criteria for evaluating mixture studies for risk assessment, and recommendations identifying the appropriate mixture models. This session should interest regulatory scientists, governmental regulators, statisticians, and academics.

Suggested Topics

- Novel approaches to evaluate combined effects of environmental mixtures
- Environmental assessment of tank mixtures
- Cumulative risk
- Current regulatory issues with mixture assessments
- Selection of additivity models in environmental risk assessment
- Criteria to evaluate mixture studies for risk assessment
- Environmental metabolites

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Developing Pesticide Environmental Risk Assessment Approaches

Purpose of Symposium

In the pesticide registration process, extensive data packages on environmental fate and ecotoxicology are required in many countries. However, in some countries and regions, there are often no specific requirements to conduct environmental risk assessments leading to efforts for developing environmental risk assessment frameworks for crop protection products.

In this symposium, we plan to bring together frameworks, approaches, and challenges in various components of such risk assessments, including pesticide exposure modeling, data generation, risk characterization, risk refinements, and mitigation. Presentations describing current status of risk assessments, approaches, cases studies, original research, and literature review which address these and related topics are encouraged. Scientists and regulators engaged in aspects of environmental risk assessment will benefit by active participation.

Suggested Topics

- Protection goals
- Effects assessments
- Exposure modeling and assessments
- Development of exposure scenarios
- Data generation, data sharing, and availability
- Risk assessment and characterization approaches and challenges
- Options for higher tier assessments and risk refinements
- Options for risk mitigation
- Scientific collaboration and exchange

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***Emerging Mass Spectrometry Trends in Support of
Agricultural Research and Development***

Purpose of Symposium

Advances in instrumentation have been one of the most important drivers in the way we conduct agricultural research and development. Newer mass spectrometry instrumentation has provided better analyte selectivity, improved sensitivity, and higher sample throughput. Instruments incorporating accurate mass and high mass resolution capabilities will significantly impact how studies are performed. As instrument costs have decreased, these instruments are now more available to laboratories across industry, CRO's, and academia. Laboratories are now incorporating accurate mass technology into all aspects of agricultural research and development ranging from product discovery and development, product registration, and monitoring of food and environmental samples. This symposium will focus on many of these areas.

Suggested Topics

- Use of high resolution accurate mass (HRAM) instrumentation for metabolite identification
- Use of role of HRAM / accurate mass instrumentation for quantitative analyses
- HRAM-based quantitative/qualitative workflows for pesticide discovery
- Advanced software applications for metabolite identification and structural elucidation
- Agricultural research and development applications of ion mobility mass spectrometry
- The use of Isotopic labeling of agrochemicals to assist in metabolite identification
- Applications of accurate mass instrumentation in multi-residue analyses
- Mass spectrometry for confirmation in animal drug residues
- Targeted and non-targeted pesticide analyses
- Applications of MS-imaging in agricultural research and development
- High throughput applications utilizing HRAM instrumentation.

For further information, contact the organizers

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Encountering Challenges in Analysis of Small Polar Metabolites

Purpose of Symposium

The plant and animal metabolism studies on agrochemicals typically are conducted using ¹⁴C. Current regulations require identifying metabolites at levels ≥ 0.01 mg/kg. It is quite common to have metabolism studies where the parent molecule metabolizes to very polar metabolites (small molecules with 3-5 carbons) that elute very close to the void volume. But these small polar metabolites contain oxidized functional moieties, often lack chromophores, and can be difficult to ionize in MS. Therefore, these metabolites need to derivatization and significant purification prior to identification and characterization work.

The objective of this symposium is to discuss the general challenges and possible strategies to identify the small molecular mass, polar metabolites. This symposium will also be of interest to scientists in the ANYL and ENVR divisions.

Suggested Topics

- Analytical challenges in characterizing small polar metabolites
- Case studies on solving challenges in the analysis of polar metabolites
- LC/MS analysis of polar metabolites using derivatization (e.g., dansyl chloride) approach
- Alternatives to reverse phase analysis of very polar metabolites (e.g., HILIC, TLC)
- Novel isolation techniques, non-UV based detection methods for and identification/characterization of polar metabolites
- Applicability of accurate mass analyses
- Utilization of novel radiochemical detection technologies

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***Environmental Fate, Transport, and
Modeling of Agriculturally-related Chemicals***

Purpose of Symposium

Effective risk assessment of pesticides requires detailed measurement and/or prediction of their environmental fate in target-use regions. This symposium will improve knowledge and identify research needs on this critically important topic. Results are expected to improve the accuracy and confidence in pesticide exposure and risk assessments and will facilitate harmonization of pesticide registration globally. Spatial and temporal variability, fate process coupling and interaction, conservation practice implementation, and changing climates may also add substantial variability to pesticide fate assessments.

Presentations describing original research, cases studies, and literature reviews which address these and related topics are encouraged. Scientists and regulators engaged in all aspects of pesticide exposure assessment, modeling, and fate evaluation will benefit by active participation.

Suggested Topics

- Relating laboratory and field fate measurements
- Conduct and interpretation of environmental monitoring
- Regulatory relevance of modeling, monitoring, and environmental fate measurements
- Use of modeling vs. monitoring
- Advances in modeling of the environment
- Policy implications of modeling, monitoring, or environmental fate
- Improving model accuracy
- Establishing model calibration and validation criteria
- Coupling fate processes and models
- Assessing climate change impact
- Spray and application technology as related to environmental fate

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Fate and Metabolism of Agrochemicals
Early Career Scientist Symposium

Purpose of Symposium

The symposium will provide a platform for the close interactions between early career scientists who have been in the agricultural and environmental related fields for less than ten years. Subjects will include: a) innovative methods, tools and instrumentations that are applicable to investigating the agrochemical behavior in the environment; b) advanced analytical techniques that can improve the accuracy or efficiency of analyzing agrochemicals in the environmental matrices; and c) emerging issues in environmental fate and exposure modeling and risk assessment of agrochemicals.

The symposium will enhance the profound understanding of the environmental behavior of the agricultural chemicals from various perspectives and is open for collaboration with other divisions such as ENVR and ANYL.

Suggested Topics

- The non-extractable residues (NER) in environmental fate and metabolism studies
- Advanced *in vivo* and *in vitro* tools for metabolite identification
- Developments in higher-tiered environmental fate and exposure modeling: soil, air, and water media
- New techniques in sample preparation for environmental residue and metabolism analyses
- Application of advanced analytical techniques in environmental fate and metabolism studies
- Advances in environmental exposure and risk assessment of agrochemicals

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Good Laboratory Practices for the Agrochemical Professional

Purpose of Symposium

Good Laboratory Practices (GLPs) are a set of quality principles that provide a framework within which laboratory and field studies are planned, performed, monitored, recorded, reported, and archived. GLPs help assure regulatory agencies that the data submitted are a true reflection of the results obtained during the study and can therefore be relied upon when making risk or safety assessments.

The purpose of this symposium is to provide guidance for ensuring the quality and integrity of data submitted to the regulatory agencies, specifically the US Environmental Protection Agency (EPA). Participants in this symposium will gain understanding of how GLPs impact the conduct of their studies, learn about common agency findings and how to avoid them, and get an overview of the current regulatory outlook of EPA GLPs.

The target audience includes anyone that works or is interested in working on studies that support applications for research or marketing permits for pesticide products regulated by the EPA, Quality Assurance/Quality Control professionals, and those new to the GLP environment. This symposium will be held in conjunction with the EPA-GLP Specialty Section of the Society of Quality Assurance (SQA). Other ACS Divisions that may be interested in attending this symposium include AGFD, ANYL, and ENVR.

Suggested Topics

- GLP training for a better understanding of 40 CFR Part 160 guidelines, roles, and responsibilities
- EPA GLP Inspection Program: interpretation, enforcement, and case studies
- Conduct of EPA agricultural field trials
- Effective management of multi-site studies
- Regulatory submissions of pesticide data in the US and worldwide
- Conduct of method validations and independent lab verifications
- Development of standard operating procedures to meet GLPs

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***Higher Tier Laboratory and Field Approaches to
Refine Risk Assessment***

Purpose of Symposium

Tiered approaches are used by many regulators starting with Tier I risk assessment with limited information and conservative assumptions. The accuracy and realism often requires specifically-designed, environmentally-specific approaches to provide more information on refining the assessment. The advanced approaches include non-guideline fate studies, specifically designed field studies, targeted monitoring, and historical monitoring data.

This symposium will provide an opportunity to discuss what advanced laboratory and field studies have been conducted and how these higher tier studies are used in refining exposure risk assessment.

Suggested Topics

- Specifically-designed lab fate studies to answer particular questions on degradation rates and pathways and provide more information for refined risk assessment
- Novel approaches to characterize environmental behaviors of plant protection products, e.g., adsorption/desorption behaviors, plant uptake factors
- Targeted or historical groundwater/surface water monitoring used for calibration/refinement of exposure models
- Advanced field testing to evaluate runoff potential, groundwater leachability, off-target spray drift potential
- Other topics addressing higher tiered studies

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***How Can Chemistry Improve the Human Health Exposure
and Risk Assessment of Chemicals?***

Purpose of Symposium

The human health risk assessment paradigm is changing. One important aspect of this change is the focus upon refining exposure assessments.

To date, the greater weight has generally been on hazard in the risk assessment process, with exposure being considered retrospectively. The result is the expenditure of considerable time, effort and resource on acquiring hazard information that ultimately is not always required to reach conclusions on the safety of a chemical. As a result, scientists have been working to develop exposure and risk assessment methods to change this paradigm.

With analytical and modeling capabilities increasing, the technology now exists to support these changes. Learnings from all chemical sectors will be shared – agrochemical, pharmaceutical, industrial, cosmetic/personal care.

This symposium will focus upon this key aspect of the risk assessment process, exposure, and emphasize how a better understanding of human exposure can refine chemical risk assessment. It will provide a forum for academic researchers, industry scientists, and regulators to present and discuss recent advances in the area of exposure assessment for chemicals.

Suggested Topics

- Innovations in dietary and non-dietary exposure assessment
- Exposure assessment approaches used by global regulatory agencies
- Risk21 Exposure Theory and case-studies
- Developing better biomonitoring databases
- Molecular simulations of exposure scenarios
- Ecological toxicokinetics and risk assessment
- Toxicokinetics and the use of systemic dose data
- Probabilistic exposure modeling
- Model development to assess human exposure
- Population exposure model development/status
- Use of human biomonitoring data
- Internal dosimetry for dose-response and exposure assessments
- Microsampling and improvements in analytical capabilities
- Physiologically based pharmacokinetic modeling
- Biomonitoring equivalents
- *In vitro*-to-*in vivo* extrapolation modeling to allow better the relationship between mode of action and exposure
- Exposure assessments in epidemiology

For further information, contact the organizers

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Managing Pesticide Use and Use Data

Purpose of Symposium

Pesticides are accepted means of pest management because they are generally effective, economical, and easy to use, however, there are growing concerns about the negative environmental effects of pesticides. Since 1974, California laws that require pesticide use reporting, and full pesticide use reporting began in 1990. As such, California has a very comprehensive pesticide use report (PUR) database that can be used to answer many questions and concerns.

This symposium is intended for industry professionals, academic researchers, and stakeholders from the agricultural community who seek a better understanding of how pesticide use data may be used in the areas of pest management, environmental impact assessment, and ecosystem and public health.

The symposium is designed to increase the understanding specifically on PUR data and its uses, as well as examining analytical methodologies that have been used on PUR data. The goal of the symposium is to highlight current research by industry, government agencies, and academia to integrate pesticide use data with other available data in the public domain. The symposium will allow attendees to share their experiences working with large datasets to address agricultural and environmental issues concerning pesticide use and may also foster potential collaborations.

Suggested Topics

- Pest management and pesticide use in both ag and urban settings
- Pesticide use trends in high value cash crops
- Economic analysis of pesticide use and environmental impacts
- Pesticide environmental occurrence, mitigation methods and effectiveness and aquatic risk assessment
- Database and online mapping for monitoring data, outreach and regulatory strategies
- Human health risk assessment for pesticides
- Pesticide illness surveillance and trends

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***Mechanistic Modeling and Effectiveness of Buffer Strips
for Pesticide Regulatory Frameworks***

Purpose of Symposium

Use of buffer strips is well-known best management practice that could be included on crop protection product labels to mitigate pesticide loads from runoff, sediments, and drift from agricultural areas to water bodies. However, current regulatory tools can only deal with the effect of the drift that is being deposited on a water body. While a significant body of literature shows that specially-constructed vegetated filter strips (VFS) can reduce pesticides in runoff, no regulatory or academic tool has been formally accepted to evaluate VFS effectiveness or changes in exposure and risk assessments.

This symposium will focus on mechanistic descriptions and identification of factors that may affect the filter performance of VFS under real-world conditions, such as the effect of surface flow concentration, high water table, long-term accumulation and degradation of pesticides in the buffer areas, and soil preferential flow.

Suggested Topics

- Regulatory need for a physically-based models to estimate the impact of buffer strips
- Mechanistic models to simulate buffer strips
- Examples of the implementation of buffer strips modeling in pesticide regulatory frameworks and its impact on exposure and risk assessments
- Advances in buffer strips modeling to account for filter efficacy due to high water table, preferential flow, pesticide accumulation/degradation within the buffer, etc
- Field and monitoring studies (long-term preferred) of pesticide removal using buffer strips

For further information, contact the organizers

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Pesticide Registration, Monitoring, and Enforcement: The Big Picture

Purpose of Symposium

This symposium will provide an overview to pesticide registration, monitoring, and enforcement. The goal of the symposium is to illustrate who does what in the complex world of pesticides. Speakers from US government will explain their agencies' roles and how their mission helps to ensure that pesticides are used correctly - keeping the consumer and environment healthy. Aspects of international pesticide standards setting and monitoring will also be presented.

This symposium will educate those in government, industry and academia who would benefit from a better understanding of the big picture of balancing pesticide benefits and risks. The target audience includes those who may already have a role with pesticides (including policy), but who want to understand better how their efforts fit into the larger scheme of pesticide oversight. This symposium will also allow those unfamiliar with pesticide registration and use, to learn the multi-faceted efforts to protect the environment and ensure a healthy food supply. Finally, for those with interest and/or experience with pesticides and agriculture, this symposium will identify a variety of agencies at which one might apply and further develop their skills.

Suggested Topics

- The roles of EPA and FDA in registering pesticides: what they require, how they assess pesticides and establish tolerances
- By whom and how pesticides are monitored in our food
- How pesticide residues are monitored in imports vs domestically produced foods
- What happens when a pesticide is detected in our food at concentrations exceeding US regulatory limits
- How environmental safety of pesticides is determined
- International pesticide registrations; the Codex process
- US government's international efforts to support effective/harmonized pesticide evaluations in the rest of the world

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Pesticides, Pollinator Health, and Agricultural Sustainability

Purpose of Symposium

Overwintering losses of managed honey bee (*Apis mellifera*) colonies in the US over the past decade have averaged 30 - 40% nationally. National surveys conducted by the Bee Informed Partnership indicate that beekeepers consider losses greater than 17% to be economically unsustainable. Some species of wild pollinators are reported to be declining as well. Although multiple factors (*i.e.*, pests, pathogens, pesticides, poor nutrition, suboptimal bee management practices) acting in combination have been associated with colony losses, segments of the public including some researchers attribute pollinator losses directly to pesticide exposures.

Previous ACS symposia have focused on the process used by regulatory authorities such as the US EPA to evaluate potential risks of pesticides to bees. The purpose of this symposium is to present advances in methods and tools to support the risk assessment process and the application of pesticide risk assessments and risk management to address pollinator health and agricultural sustainability. Special focus will be on elements of recently completed risk assessments which will be of interest to the world-wide regulated community and will underscore the strong foundation of science applied to assessing and mitigating potential risks. This symposium will also be of interest to the AGFD and ENVR.

Suggested Topics

- Pollinator health and agricultural sustainability
- Role of pesticides (*e.g.*, insecticides, fungicides and herbicides) on pollinator health and agricultural sustainability
- Risk assessments to support regulatory decisions on pesticides
- Integrating lab and field-based studies for determining pesticide exposure and effects on pollinators
- Managing and mitigating risks of pesticides to pollinators
- Current and emerging tools and methods for evaluating effects of pesticide exposure on pollinators
- Model development to simulate exposure and effects to bees and pollinators
- Adverse outcome pathways (AOPs) as a conceptual model for integrating and evaluating data over multiple levels of biological organization
- Harmonization efforts across regulatory authorities for evaluating risk to pollinators
- Non-*Apis* bee exposure and effects
- Indirect effects of agrochemicals to insect pollinators
- Evaluating impacts of pesticides on pollination as an ecosystem service

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Protection of Agricultural Productivity, Public Health, and the Environment (General Session)

Purpose of Symposium

The AGRO Division currently has programs in a number of topic areas, but not all topics are developed into a technical symposium at every meeting.

The General Session therefore allows our members and other scientists to submit papers even though a specific symposium topic is not offered. This year only poster presentations are possible; every attempt will be made to group papers into “mini-symposia” within this session.

Technical Topics for AGRO

- Advances in Agrochemical Residues, Analytical and Metabolism Chemistry, and Metabolomics
- Air Quality and Agriculture
- Agrochemical Toxicology and Mode of Action
- Biorational Pesticides, Natural Products, Pheromones, and Chemical Signaling in Agriculture
- Developments in Integrated Pest Management and Resistance Management
- Discovery and Synthesis of Bioactive Compounds
- Ecosystem and Human Health/Exposure and Risk Assessment
- Environmental Fate, Transport, and Modeling of Agriculturally-related Chemicals
- Formulations and Application
- Human and Animal Health Protection: Vector Control, Veterinary Pharmaceutical, Antimicrobial and Worker Protection Products
- Non-Food/Feed Production and Uses of Ag Commodities and Byproducts
- Regulations, Harmonization, and MRLs
- Technological Advances and Applications in Agricultural Science (e.g., Nanotechnology, Genetically-modified Organisms, and Biocontrol Agents)
- Urban Agriculture: Turf, Ornamentals, Household Products, and Water Reuse

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Qualitative and Quantitative Endogenous Protein Detection

Purpose of Symposium

Endogenous protein measurement is of concern for product development and regulatory evaluation of genetically modified (GM) organisms in agriculture. As part of the safety assessment, endogenous proteins, such as allergens, enzymes, and anti-nutrients from GM soybean, wheat, rice, potato, salmon etc, are evaluated to consider if unintended changes in endogenous protein profiles have occurred with the insertion of the transgene relative to the conventional counterpart.

However, measurement of endogenous proteins from complex matrices present a number of analytical challenges, such as specificity of the analytical method to identify target analyte, lack of negative control tissue, and choice of analytical standard. Protein modification, such as lipidation, acetylation, glycosylation, oxidation etc, adds even more analytical difficulty.

This symposium will discuss the analytical challenges associated with accurate detection of endogenous proteins as well as discussion for the safety assessment of endogenous proteins in the regulatory atmosphere. The symposium would be of interest to scientists practicing protein qualitative and quantitative analyses and to regulatory offices evaluating applications for product registrations. BIOL, ANYL, and AGFD may also be interested in this symposium.

Suggested Topics

- Advancements in biotechnology endogenous protein detection (e.g. ,multiplexing, throughput, accuracy)
- Method validation and optimization practices for endogenous protein detection
- Regulatory perspectives in endogenous protein (allergen) measurement
- Endogenous protein analytical standard selection and characterization
- Design and execution of allergenicity studies for agricultural biotechnology safety assessment
- Effects of genetic and environmental factors on endogenous protein levels.

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Residue Analytical Method Transfer from Initial Method Development to End Use: Considerations for the Metabolism and Residue Chemists

Purpose of Symposium

One of the most important scientific products to come out of a new pesticide registration application process is the analytical method to determine the residues of the active ingredient and its significant degradation products and metabolites. The analytical method must meet typical guideline requirements of high recovery, sensitivity, and selectivity. However, in order to produce a truly useful method, the method must also be rugged and robust. Moreover, the method must be applicable across a large cross section of different matrix types.

The primary focus of this symposium will be to discuss approaches to method development that produce methods that not only reach the goals of high recovery, sensitivity, and selectivity, but also are easy to use and transfer. This symposium will engender communication between metabolism chemists, residue analytical chemists, registrants, and those interested in learning more about analytical methods employed in the determination of pesticide residues. Bringing together the front end of the process (metabolism) with the final end user of the product (residue) will open dialogue about bridging the goals of the initial development process with the challenges of applying the method to all applicable uses. Other ACS divisions that may benefit from this symposium are ANYL, ENVR, and AGFD.

Suggested Topics

- Structuring method development with ease of use in mind
- Innovative ways to create methods that are both rugged and robust
- Promoting communication throughout the process of development (metabolism) to daily use (residue)
- Meeting and exceeding method documentation standards
- Evaluating ways to create feedback into the development process (from residue groups back to metabolism groups)
- Learning from successes, specifically the successful transfer of metabolism method to residues studies (what has worked and why)
- Learning from mistakes, how to improve the final product by applying lessons from failed ILV attempts
- Best practices of method transfer from Sponsor company to CRO (also group to group and lab to lab transfers)
- What to avoid to make method transfer easier
- Best communication practices between CRO and method developers

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***Richard Allen Memorial Symposium:
A Passion for Pesticide Fate in the Environment***

Purpose of Symposium

The purpose of this symposium is to honor the contributions of Dr. Richard Allen to the science of environmental fate of pesticides. Richard passed away suddenly on March 17, 2016. He was a brilliant scientist, a quick pragmatic out-of-the box thinker. He was passionate about the environment, particularly the fate of pesticides in soils, water and air.

During his notable and productive career, Richard helped to develop new methods and ways to understand the fate of pesticides in soil and water. He was one of the pioneers of quantitative methods (i.e. modeling) pesticide fate in environment. Later on he was instrumental in developing effective monitoring programs that not only helped gather meaningful information, but was also helpful in developing higher tier models to explain the fate of pesticides in the environment.

Richard collaborated with and mentored a number of people in various disciplines and background. As much as he was a passionate scientist, he was also a compassionate human being, capable to making anyone feel special. He was a leader who led by example.

Suggested Topics

To honor his career and contributions to pesticide fate in environment, we invite presentations not necessarily limited to the suggested topics below.

- Advances in modeling and monitoring of pesticides
- Adsorption kinetics
- Characterizing pesticide kinetics in soil and water to refine pesticide fate in the environment
- Regulatory versus real-world modeling of aquatic and drinking water exposure
- Bioavailability and extractability of pesticide residues
- Crosswalk comparisons across ecoregions
- Conducting non-guideline studies for improved risk assessment
- Monitoring and modeling strategies for pollinator safety

For further information, contact the organizers

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***Risk Assessment and Beyond:
Innovative Approaches to Meet FIFRA and ESA Consultation Needs***

Purpose of Symposium

This symposium will examine risk assessment methods currently used and will explore ways that proactive conservation actions, such as the development of on-the-ground programs, best management practices, and data collection, might be used to facilitate the FIFRA/ESA pesticide consultation process.

The registration and registration review of pesticides under FIFRA presents many challenges to regulating agencies, pesticide registrants, and end-users when it comes to evaluating, ensuring and/or communicating the adequate protection of species listed under ESA. Adequate protection is attainable through sound science, decisions that take into account various interactions within the environment, and knowledge about local conditions. In addition to exploring refined risk assessment techniques, this session will discuss local and regional examples of conservation and management programs that address pesticide use and serve to provide a net benefit to ESA-listed species.

This session will be of interest to pesticide registrants, pesticide users, regulating and wildlife management agency staff, and conservation-based organizations that attend the AGRO and ENVR sessions of the ACS meeting.

Suggested Topics

- Voluntary proactive consultation as a mechanism of species protection
- Programmatic approaches to consultation based on existing best management practices
- Strengthening the value of conservation strategies and aggregated data
- Approaches to pesticide risk assessment under a more programmatic policy
- The necessity of pesticides (most commonly herbicides) in protection and restoration of habitat for threatened and endangered species
- Applying tiered risk assessment to the FIFRA/ESA consultation process

For further information, contact the organizers

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Roles of Natural Products for Biorational Pesticides in Agriculture

Purpose of Symposium

Chemical products from nature have been used to control pests since the early beginnings of agriculture. Since these primitive years, natural products have played a direct role in controlling weeds, insects, plant pathogens, and nematodes.

This symposium will highlight the use and importance of natural products as biorational pesticides as related to agricultural commodities. Presentations will focus on the isolation of and applied use of natural products to agricultural systems. Chemical ecologists, chemists, biocontrol scientists, entomologists, and plant physiologists will benefit from the presentations. ACS members from BIOL, ANYL, ENVR, and AGFD will find the topics applicable to their fields.

Suggested Topics

- Host plant volatiles as attractants of herbivorous insects
- Synthetic formulations of host plant volatiles as an insect monitoring tool
- Sensitive collection techniques for *in situ* or in-field analyses of plant volatiles
- Plant-insect, plant-microbe interactions that influence insect pests or beneficial insects
- Plant- or microbe-produced natural products that influence insects, pathogens, nematodes, or weeds
- Plant-plant interactions that influence plant defense systems
- Plant-incorporated protectants for crop pest management

For further information, contact the organizers

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***Species Habitat Determination and
Chemical Exposure Routes and Timing***

Purpose of Symposium

Novel and robust approaches for spatial and temporal characterization of potential exposure to non-target species (both listed and non-listed) and their associated habitat(s) are emerging as a central theme in agrochemical risk evaluation. Several challenges need to be addressed: 1) paucity of species habitat information that is currently available in digital form, 2) spatial and temporal complexities of dynamic landscape composition, and 3) definition of local-scale farm and crop management and associated exposure route (i.e., drift versus runoff), timing, and location of agrochemical application.

The goal of this symposium is to integrate novel frameworks, case studies, automated filtering, numerical simulation(s), and geospatial technologies and techniques with information related to species biology and life cycle, farm and crop management, environmental conditions, landscape composition, and land use change. This symposium is aimed at modelers, risk assessors, land use managers, and scientists applying spatial technologies to better integrate temporal and spatial information related to species habitat definition and associated agrochemical exposure routes and timing.

Suggested Topics

- Habitat information/description sources, modeling techniques, and characterization
- Environmental data analysis and synthesis
- Agrochemical product use, timing, farm and crop management related to exposure pathways
- Implications of mixtures and integrated pest management
- Species (listed and/ non-listed) biology and life cycle related to potential exposure to agrochemicals
- Landscape composition and land use change characterization
- Exposure estimates related to a percent crop treated concept
- Bias factor development for use with monitoring data
- Geospatial advances related to species habitat definition, species life cycle information, and temporal and spatial exposure characterization
- Bias factors with monitoring data.

For further information, contact the organizers

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Synthesis and Chemistry of Agrochemicals

Purpose of Symposium

The symposium will highlight recent research in the synthesis and chemistry of agrochemicals. Presentations which describe the design, isolation, synthesis, biology and/or structure-activity relationships of new chemistry targeting crop protection are welcomed.

Suggested Topics

- Insecticides: Agronomic, Urban, or Animal Health
- Herbicides
- Fungicides
- Nematicides

For further information, contact the organizers

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***Tiered Testing for Pollinator Protection:
Experiences in Design, Implementation, and Interpretation***

Purpose of Symposium

The protection of pollinators is a high priority by regulatory agencies, registrants, and the agricultural community that requires clear guidelines, valid studies, sound science, and a commitment to clear communication and cooperation among all stakeholders. In July 2016, the US EPA Office of Pesticide Programs released two guidance documents for testing and assessing risk: *Process for Requiring Exposure and Effects Testing for Assessing Risks to Bees during Registration and Registration Review* and *Guidance on Exposure and Effects Testing for Assessing Risks to Bees*.

The objective of this symposium is to exchange experiences and successes in implementing these guidelines. How well are the guideline studies being adopted and what challenges are laboratories facing? What experiences can be shared to improve efficiencies, reliability, and reproducibility? How can results be interpreted and used in risk assessments? How are exposure pathways measured and used in estimating exposure and the conduct of risk assessments? How best to balance statistical versus biological significance.

Intended audiences are researchers, contract labs, and registrants responsible for understanding and implementing these guideline studies, and registrants and regulatory agencies charged with evaluating and interpreting results.

Suggested Topics

- Shared experiences conducting Tier I studies – protocol objectives, study design, reliability, and reproducibility
- Experiences with larval toxicity ring-testing
- Experiences with adult chronic testing
- Possible factors contributing to reliability and reproducibility of results
- Impact of test matrices on toxicity results
- Analytical challenges for determining residues in different hive matrices
- Extrapolating relationships of toxicity from laboratory to field. Translating study results to real-world field exposures and effects
- When does presence pose a risk? Evaluating exposure vs. hazard for pesticides in plant matrices. Interpreting residue data vs. biological significance
- Impacts of pollinator risk assessments for product registration, mitigation, and label language
- Shared experiences with harmonization of testing methods with US, Canada, and European Union

For further information, contact the organizers

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Veterinary Drugs: Research, Residues, and Regulations

Purpose of Symposium

Veterinary pharmaceuticals cover a broad topic area of importance, interest, and investigations. EuroResidue and Veterinary Drug Residue Analysis conferences are held alternately on even-numbered years in Europe, and SaskVal is held in Canada every other odd-numbered year (the next one will be in 2019), which gives ACS-AGRO an opportunity to fill the gap in the USA in 2017 with this topical symposium.

All aspects of research, residues, and regulations pertaining to the topic of veterinary drugs use or lack of use in organic food animal production practices are welcome. Speakers from academia, industry, NGOs, and government agencies from around the world are welcome to share new developments in their work, including the potential for antimicrobial resistance in human health and the ecosystem due to veterinary antibiotic use in agriculture.

Suggested Topics

- Antimicrobial resistance in veterinary applications and potential impact on health and the ecosystem
- Development and evaluation of new veterinary drugs
- New analytical methods for analysis of veterinary drug residues in different sample types
- Veterinary drug residues in the environment
- Regulatory aspects
- Antimicrobial applications in plant production
- Monitoring programs and results from around the world
- Veterinary drugs in aquaculture
- Changes in veterinary drug practices including organic food production

For further information, contact the organizers

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