

## STEVEN PAUL BRADBURY, Ph.D.

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### *Education:*

**Doctor of Philosophy (1985)** • Toxicology and Entomology • Iowa State University • Ames, IA • Phi Kappa Phi  
**Master of Science (1981)** • Entomology (Insecticide Toxicology) • Iowa State University • Ames, IA  
**Bachelor of Science (1978)** • Molecular Biology • University of Wisconsin • Madison, WI • With Honors

### *Citizenship:*

United States of America

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## PROFESSIONAL EXPERIENCE

### IOWA STATE UNIVERSITY, DEPARTMENTS OF NATURAL RESOURCE ECOLOGY AND MANAGEMENT AND ENTOMOLOGY

**Professor** 8/2015 - present  
**Visiting Professor** 7/2014 – 7/2015

Tenured Professorship in Iowa State University's Departments of Natural Resource Ecology and Management and Entomology and Toxicology Program contributing to research, extension and teaching in University-wide toxicology, environmental, agriculture and natural resource science and policy programs. Areas of emphasis include pesticide resistance management, pollination services, monarch butterfly conservation and sustainable agriculture, including the role of integrated pest management within nested layers of governance. Teaching in areas of toxicology, pesticide and chemical risk assessment and related policy topics.

### STEVEN P. BRADBURY AND ASSOCIATES, LLC

**President** 4/2014- present  
President and founder of a consulting firm to support clients as they advance sustainable, safe pest management technology for agriculture, natural resource and public health protection programs. Client base includes: pesticide manufacturers, and their associated support networks; users of pest management technologies; grower associations; public interest, environmental and animal welfare organizations; international bodies; and task forces and partnerships of diverse organizations. Expert advice advances clients' goals in achieving U.S. and international pesticide registrations; navigating national and international regulatory policies; guiding innovative assessment technology and stewardship programs; and counseling collaborative resolution of pesticide policy issues.

### UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

**OFFICE OF CHEMICAL SAFETY AND POLLUTION PREVENTION**  
**OFFICE OF PESTICIDE PROGRAMS**, Washington, DC

**Office Director (SES)** 4/2010- 3/2014  
**Acting Office Director (SES)** 1/2010 -3/2010

Executive responsible for developing and implementing the nation's pesticide policies and regulations under three Federal statutes and in coordination with related environmental Federal laws; e.g., the Clean Water, Safe Drinking Water, Endangered Species and Plant Protection Acts. Direct management and operational responsibilities over the largest EPA Headquarters Office with 11 senior executive direct reports, 750 staff and an annual budget of \$150 million. Primary areas of executive leadership included implementing over 1000

regulatory pesticide registration and re-evaluation decisions per year, consistent with statutory-timelines and based on externally peer-reviewed, state-of-the science human health and ecological risk assessments. Leadership ensured safe use of beneficial crop protection and public health products; development and implementation of emerging risk-based methods for pesticide and natural resource management; advancement of Integrated Pest Management and national worker protection and training programs; and support of scientific and regulatory positions within national and international fora and treaties. Executive leadership guided productive, collaborative relationships with other EPA Offices; USDA, DOI, DOC and HHS; State, Tribal and international governments; academic research and teaching institutions and a diverse stakeholder community to develop and implement innovative approaches to address cross-cutting environmental challenges. Responsible for presenting EPA pesticide policies and programs to the House and Senate Agriculture, Natural Resources and Environment committees at public hearings and through senior staff briefings.

*Specific examples of accomplishments:*

- Implemented new, state-of-the science risk assessment methods for human and ecological protection
- Implemented peer-reviewed watershed-based water quality monitoring and assessment methods
- Advanced risk assessment approaches for biotechnology and nanotechnology products
- Led EPA, USDA, DOI and DOC National Academy of Science review of pesticide risk assessment methods for endangered species
- Launched a national school IPM program
- Cancelled residential use of anticoagulant rodenticides to protect children and wildlife
- Re-designed pesticide registration and re-evaluation programs through Office-wide participation; new strategic direction addressed 21<sup>st</sup> century scientific challenges and opportunities to maximize success of budget proposals

**Deputy Office Director for Programs (SES)**

2009- 2010

With the Office Director, executive responsible for leading and managing the Office of Pesticide Programs. Areas of executive leadership included: pesticide registration and re-evaluation programs; initiatives to advance protection of sensitive subpopulations, aquatic life, wildlife and endangered species; external scientific peer reviews; US scientific and regulatory positions within the international community; and emerging toxicity testing and risk assessment methods. Forged collaborative relationships between the Program's executives and leaders in other EPA offices, Federal Departments, State governments and International Agencies.

*Specific examples of accomplishments:*

- Implemented NAS recommended toxicity testing and assessment methods for pesticides
- Issued new standards to mitigate risks of pesticide spray drift to workers, bystanders and wildlife
- Initiated the endocrine disruptor screening program for pesticides
- Led science-based, practical process to ensure protection of water quality from pesticide exposure

**SPECIAL REVIEW AND RE-REGISTRATION DIVISION**

**Division Director (SES)**

2007-2009

Executive leader of 75 Federal staff. Ensured national regulatory decisions for existing pesticides used in agricultural, commercial and residential settings met statutory timeframes and standards to protect public health and the environment. Implemented transparent risk management policies and decisions based on robust public participation.

*Specific examples of accomplishments:*

- Implemented the new registration review program
- Completed the cumulative risk assessment for *N*-methyl carbamate insecticides
- Phased-out the registration of organic arsenical herbicides to protect drinking water
- Initiated use restrictions on rodenticides to protect children and wildlife
- Completed re-registration of soil fumigants to provide protection to workers and bystanders
- Led carbofuran cancellation and tolerance revocation to protect children and wildlife

## ENVIRONMENTAL FATE AND EFFECTS DIVISION

### **Division Director (SES)**

2003-2007

Executive leader of 100 Federal staff with annual mission support contracts of \$5 million. Advanced national and site-specific ecological risk assessments and drinking water exposure characterizations to support registration and re-registration decisions of conventional pesticides.

#### *Specific examples of accomplishments:*

- Transformed the Division to advance state of the science risk assessments
- Established endangered species risk assessment methods with other Federal agencies
- Integrated risk assessments and monitoring requirements with Clean Water Act programs
- Ensured rigorous scientific support for contested pesticide cancellations and restrictions

## **OFFICE OF RESEARCH AND DEVELOPMENT NATIONAL CENTER FOR ENVIRONMENTAL ASSESSMENT OFFICE OF THE DIRECTOR 1200 PENNSYLVANIA AVE. WASHINGTON DC, 20460**

### **Executive Senior Advisor (SES)**

3/2014 – 4/2014

Executive leader advising the Center's Director and senior executives on EPA issues concerning human health and environmental risk assessment methods, research planning and Program Office commitments. The Center is EPA's lead organization in conducting chemical assessments for human health and ecological impacts; providing innovative risk assessment methods and guidelines; training EPA and State scientists on new risk assessments methods; maintaining and disseminating risk information; and defining, sponsoring, and conducting research to develop improved assessment methods.

#### *Specific examples of accomplishments:*

- Provided the Center advice on re-shaping its human health risk assessment program to be better aligned with EPA regulatory needs over the next 5 years; provided recommendations to strengthen and streamline the associated external peer-review process.

## **OFFICE OF RESEARCH AND DEVELOPMENT NATIONAL HEALTH AND ENVIRONMENTAL EFFECTS RESEARCH LABORATORY 1200 PENNSYLVANIA AVE. WASHINGTON DC, 20460**

## MID-CONTINENT ECOLOGY DIVISION, Duluth, MN

### **Division Director (SES)**

1999 – 2002

Executive leader and overall manager of laboratories in Duluth, MN and Grosse Ile, MI, which employed 104 Federal staff and 60 non-Federal staff with an annual extramural research budget of \$10 million. Planned, directed and implemented national research and demonstration programs to advance understanding of the effects of chemicals and land use on freshwater ecological resources. Incorporated the Division's research products into the Agency's regulatory programs by leading collaborative partnerships with EPA Offices and International, Federal and State agencies.

#### *Specific examples of accomplishments:*

- Reorganized the Division to more efficiently and effectively meet the mission
- Implemented monitoring and assessment programs for small watersheds and the Great Lakes and Great Rivers basins through partnerships with University consortia and other Federal and State agencies
- Transferred risk assessment and criteria methodology, models and databases to EPA programs
- Co-led the establishment of EPA's 21<sup>st</sup> century computational toxicology program

**Supervisory Branch Chief (GS-14, GS-15)**

1998–1999; 1994–1995; 1991–1993

Led research Branches of 20 - 30 Ph.D. and M.S. scientists investigating reproductive effects of industrial chemicals and pesticides on aquatic life and wildlife, the interactive effects of chemical and non-chemical stressors in aquatic ecosystems and quantitative structure activity relationships to support risk assessments for industrial chemical, pesticide, clean water and hazardous waste programs. Provided expert assistance to, and formed partnerships, with EPA Program and Regional Offices and States agencies.

*Specific examples of accomplishments:*

- Led research team leaders in multi-disciplinary and cross-organizational projects
- Established wildlife criteria for the Great Lakes as required by the Critical Programs Act
- Public release of an expert system to predict toxicity of industrial chemicals

**Acting Associate Division Director for Science (GS-14)**

1995–1997; 1993–1994

Appointed by ORD senior leadership on two occasions to direct the Division's research program. With a staff of over 75 research scientists and an annual extramural research budget of \$6 million, led the development and integration of research efforts across Branches and teams within the Division and with other EPA laboratories. Coordinated collaborative research agreements with academic institutions and other Federal, State and Tribal agencies.

*Specific examples of accomplishments:*

- Created the ECOTOX database to support EPA, Federal, State and local governmental risk assessments
- Established an environmental education program with seven bands of the Ojibwa Tribe
- Led a successful Division-wide external peer-review by EPA's Board of Scientific Counselors

**OFFICE OF RESEARCH AND DEVELOPMENT****OFFICE OF SCIENCE POLICY****1200 PENNSYLVANIA AVE.****WASHINGTON DC, 20460****ORD Regional Scientist (GS-14)**

1997–1998

Competitive detail appointment as the senior science advisor to the Region 8 (Denver, CO) Regional Deputy Administrator and Associate Administrators. Led refinement of ORD research programs to better meet Regional needs and ensure implementation of research products in Regional risk assessments, with a primary emphasis on clean water and hazardous waste/superfund applications.

*Specific examples of accomplishments:*

- Established State partnerships for a stream monitoring program west of the Mississippi River
- Advanced risk assessment approaches to facilitate waste-site remediation and pollution prevention
- Created the National Regional Science Council to advance Regional-ORD collaboration

**OFFICE OF RESEARCH AND DEVELOPMENT****NATIONAL HEALTH AND ENVIRONMENTAL EFFECTS RESEARCH LABORATORY**

MID-CONTINENT ECOLOGY DIVISION, Duluth, MN

**Research Toxicologist (GS-11, GS-12, GS-13)**

1985-1991

Led ecotoxicology research teams to advance state-of-the science risk assessments to support industrial chemical, pesticide, clean water and hazardous material regulations. Nationally and internationally recognized for scientific and research leadership. Provided technical assistance to EPA Program and Regional Offices as well as State governments. Adjunct assistant professor, University of Minnesota-Duluth, Interdepartmental Toxicology Program.

## **CONGRESSIONAL HEARINGS**

EPA hearing witness, Joint Public Hearing before the Subcommittee on Nutrition and Horticulture of the Agriculture Committee and the Subcommittee on Water Resources and Environment of the Committee on Transportation and Infrastructure, United States House of Representatives. “Regulatory Burdens Posed by the Case National Cotton Council v. EPA (6<sup>th</sup> Cir. 2009) and to review Related Draft Legislation.” February 16, 2011. The hearing addressed pesticide aquatic life risk assessments methods and application under pesticide and clean water statutes.

EPA hearing witness, Joint Public Hearing before the Committee on Agriculture and the Committee on Natural Resources, United States House of Representatives. “At Risk: American Jobs, Agriculture, Health, and Species – The Costs of Federal Regulatory Dysfunction.” May 3, 2011. The hearing addressed pesticide risk assessments for endangered species under FIFRA and ESA.

## **AWARDS AND HONORS**

Henry A. Wallace Award for Outstanding Leadership to National and International Agriculture. College of Agriculture and Life Sciences, Iowa State University. 2014.

USEPA Scientific and Technological Achievement Awards 2001, 1998, 1993.

USEPA Silver Medal – Final Great Lakes Water Quality Initiative, Wildlife Criteria, 1995.

USEPA Bronze Medal – Establishment of the National Regional Science Council, 1998.

USEPA Bronze Medal – TCDD Wildlife Risk Assessment for the Columbia River Basin, 1993.

USEPA Bronze Medal – Draft Great Lakes Water Quality Initiative, Wildlife Criteria, 1992.

USEPA Bronze Medal – Municipal Sludge Ecological Risk Assessment 1992.

## **APPOINTMENTS**

Keystone Monarch Collaborative Steering Committee (2015 – present).

U.S. Government Head of Delegation, Regulatory Coordination Council with Canada, Work Group on Pesticides (2012 to 2014).

U.S. Government Head of Delegation, Letter of Intent for Cooperation with the Institute for the Control of Agrochemicals, Ministry of Agriculture, People’s Republic of China, Work Group on Pesticides (2011 to 2014).

U.S. Government Head of Delegation, North American Free Trade Association, Technical Working Group on Pesticides (2010 to 2014).

Chair, Federal Advisory Committee, Pesticide Program Dialogue Committee (2010 to 2014).

Co-Chair, Pesticide Program Dialogue Committee workgroup on Toxicology Testing in the 21<sup>st</sup> Century (2008-2014).

Member, Technical Oversight Committee, Audubon Society Project, “Waterbirds on Working Lands: An Examination of Waterbird Activity on Agricultural Landscapes.” (2004-2007).

Chair, Organization of Economic Cooperation and Development, Validation Management Group for Non-Animal Assays; Endocrine Disrupter Testing and Assessment Working Group (2004 - 2009)

Member U.S. EPA Risk Assessment Forum (1991 - 1998).

ATSDR Steering Committee on Physiologically-Based Pharmacokinetic Models and Structure Activity Relationships (1994 - 1996).

Editorial Board, Australasian Journal of Ecotoxicology (1994 - 1999)

Organizing and Scientific Committees for the Fifth, Sixth, Seventh, Ninth and Tenth International Workshops on QSARs in Environmental Sciences (1990 Duluth, MN; 1992 Ispra, Italy; 1996 Elsinore, Denmark; 2000 Bourgas, Bulgaria, 2002 Ottawa, Canada).

Scientific Advisory Committee, University of California-Davis, Center for Ecological Health Research (1998-2001).

Scientific Steering Committee and Session Co-Chair, U.S. EPA/Department of Interior Workshop on Advances in Hardrock Mining Remediation Technology and Assessing and Prioritizing Aquatic Risk and Response, October, 1998, Denver, CO.

Scientific Steering Committee, U.S. EPA Risk Assessment Forum/Department of Interior/World Health Organization, Workshop on 2,3,7,8-TCDD TEFs for Aquatic Life and Wildlife, January 1998, Chicago, IL.

Scientific Steering Committee, U.S. EPA/ATSDR/NIEHS/ DOD, Workshop on Sentinel Species, September 1997, Fredrick, MD.

Scientific Steering Committee, Society of Environmental Toxicology and Chemistry-Europe, Workshop on Biotransformation in Environmental Risk Assessment, April 1996, Noordwijkerhout, The Netherlands.

Co-Chair, U.S. EPA International Symposium on Structural Properties for Determining Mechanisms of Toxic Action, October 1988, Duluth, MN.

Co-Chair, International Symposium on Aquatic Toxicology of the Pyrethroid Insecticides. National meeting of the Society of Environmental Toxicology and Chemistry, November 1986, Alexandria, VA.

Session co-chair at Annual Society of Environmental Toxicology and Chemistry Meetings (1996, 1991).

Society of Environmental Toxicology and Chemistry, Awards Committee Member (1985-1987).

### **TEACHING**

University of Minnesota-Duluth (1988-1991): Guest lectures in graduate toxicology courses

Iowa State University (2014-2015): Guest lectures in SUSAG530 (Ecologically Based Pest Management Strategies); ECON380 (Environmental and Resource Economics); NREM260X (Introduction to Controversial Science). Co-instructing ENT/TOX 550 (Pesticides in the Environment) and ENT 590I (Insect Toxicology).

### **GRANTS AWARDED**

US Department of Defense, Strategic Environmental Research and Development Program: Ecotoxicology Database and Modeling Support System; 1993 -1995 (\$1,300,000).

US EPA Office of Research and Development Competitive Environmental Education Training Grant: Niibin Aazhogan - An environmental resource training program (with S. Linder); 1992- 1995 (\$190,000).

US EPA Office of Research and Development Competitive Innovative Research Grant: Free radical reactivity and oxidative stress: Implications for assessing the toxicological hazards of environmental pollutants (with K. Wallace); 1990 (\$50,000).

US EPA Office of Research and Development Competitive Innovative Research Grant: Development of a noninvasive whole animal assay of neurotoxicity (with J. Coats); 1988 (\$50,000).

US EPA Office of Research and Development Competitive Innovative Research Grant: Metabolism and tumor induction of primary aromatic amines in fish (with R. Johnson); 1987 (\$50,000).

Iowa Soybean Association, Evaluating methods for establishing monarch breeding habitat in non-crop land associated with bioreactors (with R. Hartzler, S. Blodgett, R. Hellmich); September 2015 – September 2018 (\$86,154).

Iowa Pork Producers Association, Establishing monarch butterfly breeding habitat on Iowa swine production sites (with R. Hartzler, M. Honeyman); September 2015 – September 2018 (\$125,841).

### **GRANTS SUBMITTED/IN PREPARATION**

USDA/NRCS-Conservation Innovation, Enhancing monarch butterfly conservation in Iowa (with S. Blodgett, D. Debinski, R. Hellmich, R. Hartzler, J. Pleasants); submitted April 30, 2015 (\$1,521,794; September 2015- September 2018).

Iowa USDA/NRCS-Conservation Innovation, Evaluating milkweed and nectar forage seed blends for monarch butterfly breeding habitat associated with saturated buffer zones (with S. Blodgett, T. Isenhardt, R. Hartzler, R. Hellmich); submitted May 15, 2015 (\$151,423 for September 2015 – September 2018).

National Fish and Wildlife Foundation; Design of a Probabilistic Survey to Quantify Milkweed Populations in Iowa: A Framework for Assessing Monarch Habitat in the Summer Breeding Range (with S. Dinsmore, R. Hartzler, J. Pleasants; Z. Zhu); submitted July 14, 2015 (\$436, 696; November 2015 – November 2016).

### **REVIEWER**

#### *Grant Proposals:*

National Institutes of Health, Biological Models and Materials Resources Program Study Section for RFA on “Development of Non-Mammalian Models for Biomedical Research”  
Research Foundation – Flanders, Belgium  
United Kingdom, Natural Environmental Research Council

#### *Journals and Reports:*

American Chemical Society Symposium Series  
American Society for Testing and Materials, Aquatic Toxicology and Hazard Assessment Symposium Series  
Applied In vitro Toxicology  
Aquatic Toxicology  
Environmental Science and Technology  
Environmental Toxicology and Chemistry  
Human and Ecological Risk Assessment  
Journal of Economic Entomology  
National Academies of Science, National Research Council draft report on “California’s Risk Assessment Process for Pesticides”  
Pesticide Management Science

### **PROFESSIONAL SOCIETIES**

American Association for the Advancement of Science  
American Chemical Society (Agrochemical Division)  
Entomological Society of America  
Society of Environmental Toxicology and Chemistry  
Society of Toxicology

### **PUBLICATIONS AND PRESENTATIONS**

Seventy peer-reviewed journal articles and book chapters and over 70 invited and first author presentations at international and national scientific conferences (see attached Appendix).

## APPENDIX – PEER-REVIEWED PUBLICATIONS AND SCIENTIFIC PRESENTATIONS

### PUBLICATIONS

#### Peer-Reviewed Journal Articles:

1. Bradbury, S.P., Russom, C.L., Schmieder, P.K., Schultz, T.W., Diderich, R., and C.M. Auer. 2014. Advancing computational toxicology in a regulatory setting: A selected review of the accomplishments of Gilman D. Veith (1944–2013). *Appl. In Vitro Toxicol.* 1:11-20.
2. Russom, CL., Bradbury, S.P., Broderius, S.J., Hammermeister, D.J., Drummond, R.A., and G.D. Veith. 2013. Predicting modes of toxic action from chemical structure. *Environ. Toxicol. Chem.* 32:1441-1442.
3. Sappington, K.G., Bridges, T.S., Bradbury, S.P., Erickson, R.J., Hendriks, A.J., Lanno, R.P., Meador, J.P., Mount D.R., Salazar, M.H. and D.J. Spry. 2011. Application of the tissue residue approach in ecological risk assessment. *Integr. Environ. Assess. Manag.* 7:116-140.
4. Dellarco, V., Henry, T., Sayre, P., Seed, J., and S.P. Bradbury. 2010. Meeting the common needs of a more effective and efficient testing and assessment paradigm for chemical risk management. *J. Toxicol. Environ. Health, Part B*, 13:347-360.
5. Bradbury, S.P., Feijtel, T., and K. Van Leeuwen. 2004. Meeting the scientific needs of ecological risk assessment in a regulatory context. *Environ. Sci. Tech.* 463A-470A.
6. Schmieder, P., Mekenyan, O., Bradbury, S., and G.D. Veith,. 2003. QSAR prioritization of chemical inventories for endocrine disruptor testing. *Pure Appl. Chem.* 75:2389-2396.
7. Bradbury S.P., Russom C.L., Ankley G.T., Schultz T.W., and J.D. Walker. 2003. Overview of data and conceptual approaches for derivation of quantitative structure-activity relationships for ecotoxicological effects of organic chemicals. *Environ. Toxicol. Chem.* 22:1789-1798.
8. Russom C.L., Breton R., Walker J.D., and S.P. Bradbury. 2003. An overview of the use of quantitative structure-activity relationships for ranking and prioritizing large chemical inventories for environmental risk assessments. *Environ. Toxicol. Chem.* 22:1810-1821.
9. Schmieder P.K., Ankley G.T., Mekenyan O.G., Walker J.D., and S.P. Bradbury. 2003. Quantitative structure-activity relationship models for prediction of estrogen receptor binding affinity of structurally diverse chemicals. *Environ. Toxicol. Chem.* 22:1844-1854.
10. Herbrandson, C., S.P. Bradbury, and D.L. Swackhammer. 2002. Influence of suspended solids on the acute toxicity of carbofuran to *Daphnia magna*: I. Interactive effects. *Aquatic Toxicol.* 63:333-342.
11. Herbrandson, C., S.P. Bradbury, and D.L. Swackhammer. 2002. Influence of suspended solids on the acute toxicity of carbofuran to *Daphnia magna*: II. An evaluation of potential interaction mechanisms. *Aquatic Toxicol.* 63:343-355.
12. Ankley, G.T., O.G. Mekenyan, V.B. Kamenska, P.K. Schmieder, and S.P. Bradbury. 2002. Reactivity profiles of ligands of mammalian retinoic acid receptors: A preliminary COREPA analysis. *SAR and QSAR Environ. Res.* 13:365-377.
13. Mekenyan, O.G., V. Kamenska, E. Marafante, P.K. Schmieder, G.T. Ankley, and S.P. Bradbury. 2000. A computationally-based identification algorithm for potential estrogen-receptor ligands. Part II. An evaluation of a hERa binding affinity model. *Toxicol. Sci.* 58:270-281.



14. Bradbury, S.P., V. Kamenska, P.K., Schmieder, G.T. Ankley, and O.G. Mekenyan. 2000. A computationally-based identification algorithm for potential estrogen-receptor ligands. Part I. Predicting hERa binding affinity. *Toxicol. Sci.* 58:253-269.
15. Herbrandson, C., S.P. Bradbury, and D.L. Swackhammer. 1999. New testing apparatus for assessing interactive effects of suspended solids and chemical stressors on plankton invertebrates. *Environ. Toxicol. Chem.* 18:679-684.
16. Fernandez, J.D., B.C. Butterworth, P.M. Cook, and S.P. Bradbury. 1999. Temporal changes in purity and specific activity of tritium-labeled 2,3,7,8-tetrachlorodibenzo-*p*-dioxin: radiopurity model for toxicology. *Environ. Sci. Tech.* 33:3558-3567.
17. Nichols, J.W., S.P. Bradbury, J. Swartout. 1999. Derivation of wildlife values for mercury. *J. Toxicol. Environ. Health, Part B.* 2:235-355.
18. Mekenyan, O.G., N. Nikolova, S. Karabunarliev, S.P. Bradbury, G.T. Ankley and B. Hansen. 1999. New advances in a hazard identification algorithm for hormone receptor ligands. *Quant. Struct.-Act. Relat.* 18:139-153.
19. Kolanczyk, R.C., P.K. Schmieder, S.P. Bradbury, and T. Spizzo. 1999. Pathway and rate of 4-methoxyphenol biotransformation in microsomes of rainbow trout (*Oncorhynchus mykiss*) hepatic microsomes. *Aquatic Toxicol.* 45:47-61.
20. Ivanov, J.M., O.G. Mekenyan, S.P. Bradbury, and G. Shuurman. 1998. A kinetic analysis of the conformational flexibility of steroid hormones. *Quant. Struct.-Act. Relat.* 17:437-449.
21. Carlson, R.W., S.P. Bradbury, R.A. Drummond, and D.E. Hammermeister. 1998. Neurological effects on startle response and escape from predation by larval medaka (*Oryzias latipes*) exposed to organic chemicals. *Aquatic Toxicol.* 43:51-68.
22. Basak, S.C., G.D. Grunwald, G.E. Host, G.J. Niemi and S.P. Bradbury. 1998. A comparative study of molecular similarity, statistical and neural methods for predicting toxic modes of action. *Environ. Toxicol. Chem.* 17:1056-1064.
23. Bradbury, S.P., O.G. Mekenyan and G.T. Ankley. 1998. The role of ligand flexibility in predicting biological activity: Structure-activity relationships for aryl hydrocarbon, estrogen and androgen receptor binding affinity. *Environ. Toxicol. Chem.* 17:15-25.
24. Mekenyan, O.G., J.M. Ivanov, S. Karabunarliev, S.P. Bradbury, G.T. Ankley, and W. Karcher. 1997. A computationally-based hazard identification algorithm that incorporates ligand flexibility. I. Identification of potential androgen receptor ligands. *Environ. Sci. Tech.* 31:3702-3711.
25. Russom, C.L., S.P. Bradbury, S.J. Broderius, D.E. Hammermeister, and R. A. Drummond. 1997. Predicting modes of toxic action from chemical structure: Acute toxicity of industrial organic chemicals to the fathead minnow (*Pimephales promelas*). *Environ. Toxicol. Chem.* 16:948-967.
26. Rice, P.J., C.D. Drewes, T.M. Klubertanz, J.R. Coats, and S.P. Bradbury. 1997. Acute toxicity and behavioral effects of chlorpyrifos, permethrin, phenol, strychnine, and 2,4-dinitrophenol to 30-day Japanese medaka (*Oryzias latipes*). *Environ. Toxicol. Chem.* 16:696-704.
27. Bradbury, S.P., O.G. Mekenyan, and G.T. Ankley. 1996. Quantitative structure activity relationships for polychlorinated hydroxybiphenyl estrogen receptor binding affinity: An assessment of conformer flexibility. *Environ. Toxicol. Chem.* 15:1945-1954.
28. Mekenyan, O.G., S.P. Bradbury, and V.B. Kamenska. 1996. Estimating one-electron reduction potentials of quinones. *SAR and QSAR Environ. Res.* 5:255-268.

29. Karabunarliev, S., O.G. Mekenyan, W. Karcher, C.L. Russom, and S.P. Bradbury. 1996. Quantum-chemical descriptors for estimating the acute toxicity of electrophiles to the fathead minnow (*Pimephales promelas*): An analysis based on molecular mechanisms. *Quant. Struct.-Act. Relat.* 15:311-320.
30. Karabunarliev, S., O.G. Mekenyan, W. Karcher, C.L. Russom, and S.P. Bradbury. 1996. Quantum-chemical descriptors for estimating the acute toxicity of substituted benzenes to the guppy (*Poecilia reticulata*) and fathead minnow (*Pimephales promelas*). *Quant. Struct.-Act. Relat.* 15:302-310.
31. Bradbury, S.P., O.G. Mekenyan, G.D. Veith, and N. Zaharieva. 1995. SAR models for futile metabolism: One-electron reduction of quinones, phenols and nitrobenzenes. *SAR and QSAR Environ. Res.* 4:109-124.
32. Russom, C.L., S.P. Bradbury, and A.R. Carlson. 1995. Use of knowledge bases and QSARs to estimate the relative ecological risk of agrichemicals: A problem formulation exercise. *SAR and QSAR Environ. Res.* 4:83-95.
33. Bradbury, S.P. 1995. Quantitative structure activity relationships and ecological risk assessment: An overview of predictive aquatic toxicology research. *Toxicol. Lett.* 79:229-237.
34. Mekenyan, O.G., G.D. Veith, S.P. Bradbury, and N. Zaharieva. 1995. SAR models for metabolic activation: Stability of organic cation intermediates. *Quant. Struct.-Act. Relat.* 14:264-269.
35. Bradbury, S.P. 1995. Ecological risk assessment for chemical stressors: Challenges in predictive ecotoxicology research. *Australian J. of Ecotoxicol.* 1:3-9.
36. Mekenyan, O.G., J.M. Ivanov, G.D. Veith, and S.P. Bradbury. 1994. Dynamic QSAR: A new search for active conformations and significant stereoelectronic indices. *Quant. Struct.-Act. Relat.* 13:302-307.
37. Bradbury, S.P. 1994. Predicting modes of toxic action from chemical structure: An overview. *SAR and QSAR Environ. Res.* 2:89-104.
38. Mekenyan, O.G., G.D. Veith, S.P. Bradbury, and C.L. Russom. 1993. Structure-toxicity relationships for  $\alpha$ ,  $\beta$ -unsaturated alcohols in fish. *Quant. Struct.-Act. Relat.* 12:132-136.
39. Bradbury, S.P., J.M. Dady, P.N. Fitzsimmons, M.M. Voit, D.E. Hammermeister, and R.J. Erickson. 1993. Toxicokinetics and metabolism of aniline and 4-chloroaniline in medaka (*Oryzias latipes*). *Toxicol. Appl. Pharmacol.* 118:205-214.
40. Dady, J.M., S.P. Bradbury, A.D. Hoffman, M. Voit, and D.L. Olson. 1991. Hepatic microsomal N-hydroxylation of aniline and 4-chloroaniline by rainbow trout (*Oncorhynchus mykiss*). *Xenobiotica.* 21:1605-1620.
41. Bradbury, S.P. and G.M. Christensen. 1991. Inhibition of alcohol dehydrogenase activity by acetylenic and allylic alcohols: Concordance with *in vivo* electrophile reactivity in fish. *Environ. Toxicol. Chem.* 10:1155-1160.
42. Bradbury, S.P., R.W. Carlson, G.J. Niemi, and T.R. Henry. 1991. Use of respiratory-cardiovascular responses of rainbow trout (*Oncorhynchus mykiss*) in identifying acute toxicity syndromes in fish: Part 4. Central nervous system seizure agents. *Environ. Toxicol. Chem.* 10:115-131.
43. Hermens, J.L.M., S.P. Bradbury, and S.J. Broderius. 1990. Influence of cytochrome P-450 mixed function oxidase induction on the acute toxicity to rainbow trout (*Oncorhynchus mykiss*) of primary aromatic amines. *Ecotox. Environ. Saf.* 20:156-166.

44. Bradbury, S.P. and R.L. Lipnick. 1990. Introduction: Structural properties for determining mechanisms of toxic action. *Environ. Health Perspect.* 87:181-182.
45. Coats, J.R., D.M. Symonik, S.P. Bradbury, S.D. Dyer, L.K. Timson, and G.J. Atchison. 1989. Toxicology of synthetic pyrethroids in aquatic organisms: An overview. *Environ. Toxicol. Chem.* 8:671-679.
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47. Bradbury, S.P. and J.R. Coats. 1989. Toxicokinetics and toxicodynamics of pyrethroid insecticides in fish. *Environ. Toxicol. Chem.* 8:373-380.
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49. Symonik, D.M., J.R. Coats, S.P. Bradbury, and G.J. Atchison. 1989. Effect of fenvalerate on metabolic dynamics in the fathead minnow (*Pimephales promelas*) and bluegill (*Lepomis macrochirus*). *Bull. Environ. Contam. Toxicol.* 42:821-828.
50. Bradbury, S.P. and J.R. Coats. 1988. Comparative toxicology of the pyrethroid insecticides. *Rev. Environ. Contam. Toxicol.* 108:133-177.
51. Bradbury, S.P., J.M. McKim, and J.R. Coats. 1987. Physiological response of rainbow trout (*Salmo gairdneri*) to acute fenvalerate intoxication. *Pestic. Biochem. Physiol.* 27:275-288.
52. McKim, J.M., S.P. Bradbury, and G.J. Niemi. 1987. Fish acute toxicity syndromes and their use in the QSAR approach to hazard assessment. *Environ. Health Perspect.* 71:171-186.
53. Bradbury, S.P., D.M. Symonik, J.R. Coats, and G.J. Atchison. 1987. Toxicity of fenvalerate and its constituent isomers to the fathead minnow (*Pimephales promelas*) and bluegill (*Lepomis macrochirus*). *Bull. Environ. Contam. Toxicol.* 38:727-735.
54. Bradbury, S.P., J.R. Coats, and J.M. McKim. 1986. Toxicokinetics of fenvalerate in rainbow trout (*Salmo gairdneri*). *Environ. Toxicol. Chem.* 5:567-576.
55. Bradbury, S.P., J.R. Coats, and J.M. McKim. 1985. Differential toxicity and uptake of two fenvalerate formulations in fathead minnows (*Pimephales promelas*). *Environ. Toxicol. Chem.* 4:533-541.
56. Bradbury, S.P. and J.R. Coats. 1982. Toxicity of fenvalerate to bobwhite quail (*Colinus virginianus*), including brain and liver residues associated with mortality. *J. Toxicol. Environ. Health* 10:307-319.
57. Fleming, S.J. and S.P. Bradbury. 1981. Recovery of cholinesterase in mallard ducklings administered organophosphorus pesticides. *J. Toxicol. Environ. Health* 8:885-897.

### **Peer-Reviewed Book Chapters/Symposium Proceedings:**

1. Bradbury, S.P., Carlson, R.W., Henry, T.R., Padilla, S. and Cowden, J. 2008. Toxic Responses of the Fish Nervous System. In: *The Toxicology of Fishes*. DiGiulio, R. and Hinton, D. (Eds.), Taylor & Francis, Boca Raton, FL (pp. 417-456).
2. Degitz, S.J., Hoke, R.A., Bradbury, S., Brennan, R., Ferguson, L., Klaper, R., Orban, L., Spurgeon, D. and Tilton, S. 2007. Application of genomics to regulatory ecological risk assessments for pesticides. In: *Genomics in Regulatory Ecotoxicology: Applications and Challenges*. Ankley, G., Miracle, A., Perkins, E.J. and Datson, G.P. (Eds.). Taylor and Francis, Boca Raton, FL. (pp. 63-85).
3. Fairbrother, A., G.T. Ankley, L.S. Birnbaum, S.P. Bradbury, B. Francis, L.E. Gray, D. Hinton, L.L. Johnson, R.E. Peterson, G. Van Der Kraak. 1999. Reproductive and developmental toxicology of contaminants in oviparous animals. In: *Reproductive and Developmental Effects of Contaminants in Oviparous Vertebrates*. Di Giulio R.T. and Tillitt, D.E., (Eds.), SETAC Press, Pensacola, FL. (pp. 283-361).
4. Mekenyan, O.G., J.M. Ivanov, S. Karabunarliev, B. Hansen, G.T. Ankley, and S.P. Bradbury. 1998. A new approach for estimating three-dimensional similarity that incorporates molecular flexibility. In: *Proceedings of the 7th International Workshop on QSARs in Environmental Sciences*. Chen, F. and Schuurman, G. (Eds.), SETAC Press, Pensacola, FL. (pp 39-57).
5. Ankley, G., S. Bradbury, J. Hermens, O. Mekenyan, and K.-E. Tollefsen. 1997. Current approaches to the use of structure activity relationships (SARs) in identifying the hazards of endocrine modulating chemicals to wildlife. In: *SETAC-Europe/OECD/EC Expert Workshop on Endocrine Modulators and Wildlife: Assessment and Testing*. Tattersfield, L., P. Mathiessen, P. Campbell, N. Grandy and R. Lange (Eds.). SETAC-Europe, Brussels, Belgium. pp. 19-40.
6. Ankley, G.T., R.D. Johnson, G. Toth, L.C. Folmar, N.E. Detenbeck, and S.P. Bradbury. 1997. Development of a research strategy for assessing the ecological risk of endocrine disruptors. *Reviews in Toxicology* 1:231-267.
7. Bradbury, S.P. 1996. 2, 3, 7, 8-Tetrachlorobenzo-p-dioxin. In: *Noninfectious Diseases of Wildlife*. 2nd edition. Fairbrother, A., I. Locke, and G.L. Hoff (Eds.) University Press, Ames, IA. pp. 87-98.
8. Featherstone, D., C.D. Drewes, J.R. Coats, and S.P. Bradbury. 1993. A non-invasive neurotoxicity assay using larval medaka. In: *Environmental Toxicology and Risk Assessment: 2nd Volume*, ASTM STP 1216. Gorsuch, J.W., F.J. Dwyer, C.G. Ingersoll, and T.W. LaPoint (Eds.). American Society for Testing and Materials, Philadelphia, PA. pp. 275- 288.
9. Niemi, G.J., S.P. Bradbury, and J.M. McKim. 1991. The use of fish physiology literature for predicting fish acute toxicity syndromes. In: *Aquatic Toxicology and Hazard Assessment: Thirteenth Volume*, ASTM STP 1124. Barron, M. and M. Mayes (Eds.). American Society for Testing and Materials, Philadelphia, PA. pp. 245-260.
10. Bradbury, S.P. and R.L. Lipnick (Eds.). 1990. Structural properties for determining mechanisms of toxic action. *Environ. Health Perspect.* 87:181-272.
11. Bradbury, S.P., T.R. Henry, and R.W. Carlson. 1990. Fish acute toxicity syndromes in the development of mechanism-specific QSARs. In: *Practical Applications of Quantitative Structure-Activity Relationships (QSAR) in Environmental Chemistry and Toxicology*. Karcher, W. and J. Devillers (Eds.). Kluwer Academic Publishers, Dordrecht, The Netherlands. pp. 295-315.

12. Bradbury, S.P., R.W. Carlson, and T.R. Henry. 1989. Polar narcosis in aquatic organisms. In: *Aquatic Toxicology and Hazard Assessment: Twelfth Symposium*. ASTM STP 1027. Cowgill, U.M. and L.R. Williams (Eds.). American Society for Testing and Materials, Philadelphia, PA. pp. 59-73.
13. Coats, J.R. and S.P. Bradbury (Eds.). 1989. Aquatic toxicology of the pyrethroid insecticides. *Environ. Toxicol. Chem.* 8:359-429.
14. Bradbury, S.P. 1988. Fish acute toxicity syndromes: Application to the development of mechanism-specific QSARs. In: *Proceedings of the Third International Workshop on Quantitative Structure-Activity Relationships in Environmental Toxicology*. Turner, J.E., M.W. England, T.W. Schultz, and N.J. Kwaak (Eds.). Department of Energy Publication No. CONF-880520 (DE88013180), pp. 61-70.

#### **Iowa State University Reports:**

1. Bradbury, S.P. (Ed.) 2015. Resistance management: Whose problem and whose job? <http://www.ipm.iastate.edu/content/pesticide-resistance-workshop-2015>

#### **U.S. EPA Research Reports:**

1. U.S. EPA. 1995. *Great lakes water quality initiative technical support document for wildlife criteria*. EPA/820/B-95/009, Office of Water, March 1995 (a lead author; document incorporated SAB review and public comment).
2. U.S. EPA. 1995. *Great lakes water quality initiative criteria documents for the protection of wildlife: DDT, mercury, 2,3,7,8-TCDD and PCBs*. EPA/820/B-95/008, Office of Water, March 1995 (a lead author; document incorporated public comment).
3. Cook, P.M., R.J. Erickson, R.L. Spehar, S.P. Bradbury, and G.T. Ankley. 1993. *Interim report on data and methods for assessment of 2,3,7,8-tetrachloro-p-dioxin risks to aquatic life and associated wildlife*. EPA/600/R-93/055, Office of Research and Development, March 1993 (externally peer-reviewed).
4. Bradbury, S.P., G.D. Veith, and C.L. Russom. 1992. *Report on prototype expert system to predict toxic mechanism from chemical structure*. U.S. Environmental Protection Agency, Office of Research and Development, Duluth, MN. Deliverable No. 5658A.
5. Bradbury, S.P. and P.N. Fitzsimmons. 1991. *Interim wildlife criteria: Assessment of screening level values*. U.S. Environmental Protection Agency, Office of Research and Development, Duluth, MN. (Internal Agency Report).
6. Bradbury, S.P. 1990. *Validation of screening level wildlife criteria: A progress report*. U.S. Environmental Protection Agency, Office of Research and Development, Duluth, MN. (Internal Agency Report).
7. Bradbury, S.P. and R.W. Carlson. 1990. *Predictive toxicology in risk assessment: Approaches in predicting mechanisms of toxic action*. U.S. Environmental Protection Agency, Office of Research and Development, Duluth, MN. Deliverable No. 7912A.
8. Bradbury, S.P., P.N. Fitzsimmons, and E. Anderson. 1989. *Screening study for wildlife criteria development*. U.S. Environmental Protection Agency, Office of Research and Development, Duluth, MN. (Internal Agency Report).

9. Bradbury, S.P., R. Hunter, and S.A.T. Hammermeister. 1988. *Expert system to predict major metabolites of industrial chemicals: A progress report*. EPA-600/D-88-298. U.S. Environmental Protection Agency, Office of Research and Development, Duluth, MN. (Internal Agency Report).
10. Bradbury, S.P. 1986. *Report on SAR methods to predict major metabolites of industrial chemicals*. U.S. Environmental Protection Agency, Office of Research and Development, Duluth, MN. (Internal Agency Report).

### **INVITED SCIENTIFIC PRESENTATIONS/WORKSHOPS**

1. Cost-benefit analyses and U.S. pesticide registrations: Options for neonicotinoid seed treatments. 70<sup>th</sup> Annual Meeting of the North Central Branch of the Entomological Society of America. May 31 – June 3, 2015, Manhattan, KS.
2. Managing resistance: Options for shared pest susceptibility. 70<sup>th</sup> Annual Meeting of the North Central Branch of the Entomological Society of America. May 31 – June 3, 2015, Manhattan, KS.
3. Risks, benefits and sustainability: Current challenges in pesticide regulation. Kansas State University, Department of Entomology. April 13, Manhattan, KS.
4. Regulation of pesticides in the U.S.: Risks, benefits and sustainability. Iowa State University, Graduate Program in Sustainable Agriculture. March 11, 2015, Ames, IA.
5. Developing risk-based approaches for feasible pest management and endangered species protection. Iowa State University, Department of Entomology. February 9, 2015, Ames, IA.
6. Resistance management: Whose problem and whose job? Meeting Chair. Iowa State University and Iowa Department of Agriculture and Land Stewardship. January 30, 2015, Ames, IA.
7. Environmental costs and benefits of neonicotinoid seed treatments. Joint Meeting of the North Central Regional Association of State Agricultural Experimental Stations, NC204/NCCC-46, Ecology and Management of European Corn Borers, Corn Rootworm Beetles and other Above and Below Ground Insect Pests of Maize. January 26- 29, 2015, San Antonio, TX.
8. Current and emerging ground water quality issues and pesticide products. Workshop on Future and Emerging Issues for Private Wells. John Hopkins School of Public Health, Department of Health Policy and Management and Centers for Disease Control and Prevention. January 14 – 16, 2015, Baltimore, MD.
9. Regulatory issues for pest control products. Ag Chemical Update Meeting. Iowa State University, Agriculture and Natural Resources College of Extension and Outreach. December 10, 2014, Ames, IA.
10. Pesticide regulatory update. Integrated Crop Management Conference, Iowa State University, Agriculture and Natural Resources College of Extension and Outreach. December 3, 2014, Ames, IA.
11. Pesticide ecological risk assessments and common pool resources. South Dakota State University, College of Agricultural and Biological Sciences and USDA, ARS North Central Agricultural Research Laboratory. November 3, 2014, Brookings, SD.
12. Human health and ecological risk assessments for pesticides: Challenges for toxicology in the 21<sup>st</sup> century. Iowa State University, Interdepartmental Program in Toxicology. October 24, 2014, Ames, IA.
13. The next generation of sustainable chemistries and agricultural products. American Bar Association Committee on Pesticides, Chemical Regulation and Right to Know Committee. July 11, 2014, Washington, DC.

14. Practical applicability of new toxicology tools. 2<sup>nd</sup> Annual Meeting of the American Society for Cellular and Computational Toxicology. October 31, 2013, Bethesda, MD.
15. Biopesticides: registration and regulatory trends. 246<sup>th</sup> American Chemical Society National Meeting. September 8 – 13, 2013, Indianapolis, IN.
16. Can science work harder to support policy makers? European Food Safety Authority 10<sup>th</sup> Anniversary High Level Conference. November 13, 2012. Parma, Italy.
17. Scientific, regulatory, and public perspectives on the credibility and use of alternative toxicological test methods in a legislative framework. 51<sup>th</sup> Annual Meeting of the Society of Toxicology, March 11 – 15, 2012, San Francisco, CA
18. A more efficient and effective testing and assessment paradigm for chemical risk management. 51<sup>th</sup> Annual Meeting of the Society of Toxicology, March 11 – 15, 2012. San Francisco, CA.
19. Vision for an integrated approach to testing and assessment. 40 years of chemical safety at OECD: Planning for the next decade. June 15, 2011. Organization for Economic Cooperation and Development. Paris, France.
20. Fetal origin of adult disease: A regulatory perspective. National Research Council. October, 2010, Washington D.C.
21. Pesticide training and certification at EPA. 2009 North American Pesticide Applicator Certification and Safety Education Workshop. August 10 -13, 2009. Charleston, SC.
22. Status of the US endocrine disruptor screening program (EDSP). Organization for Economic Cooperation and Development- Endocrine Disrupter Testing and Assessment Workshop on OECD Countries Activities Regarding Testing, Assessment and Management of Endocrine Disrupters. Copenhagen, Denmark, September 20 – 26, 2009.
23. Meeting the needs of a paradigm shift: A regulatory perspective. Symposium on Toxicity Testing. November 4 – 5, 2009. Chicago, IL.
24. The paradigm shift in risk assessment. The McKim Conference on the Use of QSARs and Aquatic Toxicology in Risk Assessment, June 27 – 29, 2006, Duluth, MN.
25. Scientific needs of ecological risk assessment in a regulatory context. 231<sup>st</sup> American Chemical Society National Meeting, March 26 – 30, 2006, Atlanta GA.
26. National pesticide program ecological risk assessments: Status and challenges. USEPA Science Advisory Board Workshop on Ecological Risk Assessment – An Evaluation of the State of the Practice, February 7 – 8, 2006, Washington D.C.
27. Molecular biology and risk assessment: Evaluation of the potential roles of genomics in regulatory ecotoxicology. Society of Environmental Toxicology and Chemistry Foundation for Environmental Education and Society of Toxicology/Pellston Conference. Workgroup Member, September, 2005, Pellston MI.
28. Defining toxicity pathways: The foundation for establishing relevant dose-metrics and effective risk assessments. Workshop on Internal Exposure - Linking Bioavailability to Effects, August 22 - 27, 2004, Ascona, Switzerland.
29. Computational toxicology research in ORD: The scientific foundation for a paradigm shift in chemical risk assessment. USEPA Office of Research and Development Workshop on Computational Toxicology, September 29-30, 2003, Research Triangle Park, NC.

30. Ecological risk assessments: update and what's ahead. Association of American Pesticide Control Officials, August 6 - 8, 2003, Denver CO.
31. Computational toxicology in chemical risk assessment. Society of Neurotoxicology Annual Meeting, November 19 -21, 2002, Little Rock, AR.
32. Workshop on The Regulatory Acceptance of (Q)SARs for Human Health and Environmental Endpoints. European Centre for Ecotoxicology and Toxicology of Chemicals, March 4-8, 2002, Lisbon, Portugal.
33. A 3-D QSAR-based identification algorithm for potential estrogen receptor ligands. Eighth International Workshop on QSAR in Environmental Sciences, September, 16-21, 2000, Bourgas, Bulgaria.
34. Prioritization and ranking techniques for pesticides and industrial organic chemicals. Second Indo-US Workshop on Mathematical Chemistry, May, 2000, Duluth, MN.
35. Development of structure activity relationships for assessing ecological risks. 217<sup>th</sup> National Meeting of the American Chemical Society, Corwin Hansch Award Symposium, March 1999, Anaheim, CA.
36. United States Environmental Protection Agency Great Lakes Water Quality Initiative Wildlife Criteria. International Joint Commission, Great Lakes Science Advisory Board's Workgroup on Ecosystem Health Workshop on Great Lakes Water Quality Criteria, March 1998, Chicago, IL.
37. An overview of structure activity relationships in aquatic ecological risk assessments. National Science Foundation Workshop on Research Needs for Coastal Pollution, October 1997, Milwaukee WI.
38. Society of Environmental Toxicology and Chemistry Foundation for Environmental Education/Pellston Conference. Reproductive and Developmental Effects of Contaminants in Oviparous Vertebrates: Mechanisms, Ecological Consequences and Assessments of Risk, Workgroup Member, July 1997, Gregson MT.
39. Predictive models in environmental toxicology. Keynote address, Symposium on Predictive Methods in Toxicology and Environmental Toxicology, Sponsored by the University of Utrecht and the National Institute of Public Health and the Environment, May 1997, Utrecht, The Netherlands.
40. The evolution of ecological risk assessment: USEPA proposed guidelines as a paradigm for opportunities. International Environmental Conference of the Paper and Related Industries, Canadian Pulp and Paper Association and USDA Forest Service, May 1997, Minneapolis, MN.
41. Society of Environmental Toxicology and Chemistry-Europe/Organization for Economic Cooperation and Development/European Commission, Expert Workshop on Endocrine Modulators and Wildlife Assessment and Testing, QSAR Workgroup Rapporteur, April 1997, Veldhoven, The Netherlands.
42. Identifying hazards of endocrine disruptors: a modeling framework. USEPA Endocrine Disruptors Screening and Testing Advisory Committee, February 1997, Houston, TX.
43. Quantitative structure activity relationships and active analogue search techniques: an assessment of conformer flexibility. 17th Annual Meeting of the Society of Environmental Toxicology and Chemistry, Special Symposium on Environmental Endocrine Disruptors, November 1996, Washington, DC.
44. Society of Environmental Toxicology and Chemistry-Europe, Workshop on Biotransformation in Environmental Risk Assessment, Steering committee member responsible for metabolic activation component, April 1996, Noordwijkerhout, The Netherlands.
45. Development of wildlife criteria in the Great Lakes Water Quality Initiative. Fourth Annual Meeting of the Midwest Chapter of the Society of Toxicology and Chemistry, April 1996, Duluth, MN.



46. Approaches and limitations in wildlife toxicity extrapolations. Second SETAC World Congress, 16th Annual Meeting of the Society of Environmental Toxicology and Chemistry, November 1995, Vancouver, B.C., Canada.
47. Toxic equivalency methods for evaluating Ah receptor-mediated effects: Uncertainties in ecological risk assessments. Second SETAC World Congress, 16th Annual Meeting of the Society of Environmental Toxicology and Chemistry, November 1995, Vancouver, B.C., Canada.
48. Narcosis and toxicity mechanisms in aquatic organisms. Short-course on Mechanisms of Acute Toxicity: Baseline (or Minimum) Toxicity. Second SETAC World Congress, 16th Annual Meeting of the Society of Environmental Toxicology and Chemistry, November 1995, Vancouver, B.C., Canada.
49. QSARs for ecological effect assessments: integrating ecotoxicology research with model development. Proctor and Gamble Environmental Science Seminar Series, September 1995, Cincinnati, OH.
50. QSAR approaches for assessing risk of endocrine disruptors. USEPA Workshop on Ecological Effects of Endocrine Disruptors, June 1995, Duluth, MN.
51. Body burden assessments. California EPA Workshop on Guidelines for Ecotoxicological Risk Assessment, March 1995, Davis, CA.
52. QSAR applications for mixture assessments: Issues in predicting the toxicity of reacting chemicals. Sixth International Workshop on QSAR in Environmental Sciences, September 1994, Belgirate, Italy.
53. SETAC Foundation for Environmental Education/Pellston Conference. Ecological Risk Assessment Modeling System. Taskgroup chair on ecological data needs, August 1994, Pellston, MI.
54. Experiences in QSAR and Ecological Risk Assessment. CSRIO, Division of Water Resources, July 1994, Griffith, N.S.W., Australia.
55. Predictive toxicology in ecological risk assessment. New South Wales EPA, Waters and Catchment Branch, June 1994, Sydney, N.S.W. Australia.
56. Ecological risk assessment for chemical stressors: challenges in predictive ecotoxicology research. Keynote address, First Annual Conference of the Australasian Society for Ecotoxicology, June 1994, Sydney, N.S.W., Australia.
57. Ecological protection: The science. Council of State Governments and International City and County Management Association Ecological Protection Conference, April 1994, Chicago, IL.
58. Ecological effects of 2, 3, 7, 8-TCDD: An overview for aquatic life and associated wildlife. 9th Annual US EPA Regional Risk Assessment Conference, April 1994, Boston, MA.
59. Experiences in QSAR research and ecological hazard assessment. Decision support methodologies for hazard identification and risk assessment of toxic substances - A workshop sponsored by ASTDR, U.S. EPA, NCI, NIEHS, The National Library of Medicine, and Wright-Patterson Air Force Base, October 1993, Atlanta, GA.
60. The role of metabolic activation in modeling the toxicity of xenobiotics. Computational chemistry workshop, USEPA National Environmental Supercomputing Center, September 1993, Bay City, MI.
61. Predicting modes of toxic action from chemical structure: An Overview. Fifth International Workshop on QSAR in Environmental Toxicology, July 1992, Duluth, MN.

62. First order uncertainties in deriving wildlife criteria. National Wildlife Criteria Methodologies Meeting, April 1992. Charlottesville, VA.
63. Predictive toxicology in ecological risk assessment: Approaches in predicting mechanisms of toxic action from chemical structure. National meeting of the American Chemical Society, April 1991, Atlanta, GA.
64. Development of mechanism-specific QSARs: Application to ecological hazard assessments. Organization for Economic Co-operation and Development Workshop on Quantitative Structure Activity Relationships (QSARs) in Aquatic Effects Assessment, September 1990, Utrecht, The Netherlands.
65. Fish acute toxicity syndromes in the development of mechanism-specific QSARs. Practical applications of quantitative structure-activity relationships (QSAR) in environmental chemistry and toxicology, EURO - course series of the Commission of the European Communities, June 1990, Ispra, Italy.
66. Toxicokinetic and metabolic studies associated with the validation of medaka as a cancer model. Aquatic Models in Carcinogenicity Workshop, Chemical Manufacturers Association, January 1990, Washington, DC.
67. Fish acute toxicity syndromes: Application to the development of mechanism-specific QSARs. Third International Workshop on Quantitative Structure-Activity Relationships in Environmental Toxicology, May 1988, Knoxville, TN.
68. Polar narcosis in aquatic organisms. American Society for Testing and Materials Twelfth Symposium on Aquatic Toxicology and Hazard Assessment, April 1988, Las Vegas, NV.
69. Synthetic pyrethroids: Insecticides of the 80's. Iowa Pest Control Conference, January-February 1985, Ames, IA.

#### **FIRST-AUTHOR PRESENTATIONS (In Addition to Invited Presentations)**

1. New developments in a hazard identification algorithm for hormone receptor ligands. National meeting of the Society of Toxicology, March 1999, New Orleans, LA.
2. Incorporating conformational flexibility in structure activity relationships for ligand binding to steroid hormone receptors. National meeting of the Society of Environmental Toxicology and Chemistry, November 1997, San Francisco, CA.
3. Quantitative structure activity relationships for polychlorinated hydroxybiphenyl estrogen receptor binding affinity: An assessment of conformer flexibility. Seventh International Workshop on QSAR in Environmental Sciences, June 1996, Elsinore, Denmark (due to EPA travel restrictions presented by O. Mekenyan).
4. Quantitative structure activity relationships for polychlorinated hydroxybiphenyl estrogen receptor binding affinity. Fourth Annual meeting of the Midwest Chapter of the Society of Environmental Toxicology and Chemistry, April 1996, Duluth, MN.
5. Toxicokinetics and in vivo metabolism of aniline and 4-chloroaniline in medaka (*Oryzias latipes*). National meeting of the Society of Toxicology, March 1993, New Orleans, LA.
6. Development of screening-level values to identify and rank chemical hazards to wildlife. National meeting of the Society of Environmental Toxicology and Chemistry, November 1991, Seattle, WA.

7. Acetylenic and allylic alcohol reactivity, inhibition of alcohol dehydrogenase (ADH) activity and QSAR analyses for *in vivo* toxicity to fish. 12th Annual meeting of the Society of Environmental Toxicology and Chemistry, November 1991, Seattle, WA.
8. Use of non-linear dynamic systems to predict toxic mechanisms from chemical structure. Fourth International Workshop on QSAR in Environmental Toxicology, September 1990, Veldhoven, The Netherlands.
9. Metabolism and toxicokinetic considerations in using fish as *in vivo* models for carcinogen assessments. Ninth Annual meeting of the Society of Environmental Toxicology and Chemistry, November 1988, Crystal City, VA.
10. An expert system to predict the metabolism of environmental contaminants. National meeting of the Society of Environmental Toxicology and Chemistry, November 1988, Crystal City, VA.
11. Further assessment of rainbow trout respiratory-cardiovascular responses in identifying fish acute toxicity syndromes. National meeting of the Society of Environmental Toxicology and Chemistry, November 1987, Pensacola, FL.
12. Response of fish to pyrethroid intoxication. National meeting of the Society of Environmental Toxicology and Chemistry, November 1986, Alexandria, VA.
13. Toxicokinetics of fenvalerate in rainbow trout. National meeting of the Society of Environmental Toxicology and Chemistry, November 1985, St. Louis, MO.
14. Distribution and metabolic fate of fenvalerate in rainbow trout. National meeting of the American Chemical Society, September 1985, Chicago, IL.
15. Differential toxicity and uptake of two fenvalerate formulations in fathead minnows. National meeting of the Entomological Society of America, December 1984, San Antonio, TX.
16. Distribution of fenvalerate via two routes of entry into black cutworm. National meeting of the Entomological Society of America, November-December 1982, Toronto, Ontario.
17. Toxicity and metabolic fate of fenvalerate in bobwhite quail. National meeting of the American Chemical Society, September 1982, Kansas City, MO.
18. Excretion of tritium in bobwhite quail following the oral administration of radiolabeled fenvalerate. Meeting of the North Central Branch of the Entomological Society of America, March 1981, Columbus, OH.

#### **CO-AUTHOR PRESENTATIONS**

Over 50 additional paper and poster presentations at national and international scientific conferences from 1980 to 2014.