



# 6th International Conference on Pharmaceuticals and Endocrine Disrupting Chemicals in Water

October 22-23, 2007

Hilton Orange County/Costa Mesa / Costa Mesa, California



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## Final Program

### Conference advisers

- Thomas Heberer, Ph.D., Federal Institute for Risk Assessment (BfR), Germany
- Dana Kolpin, Ph.D., USGS
- Robert Masters, NGWA
- Sebastian Zuehlke, Ph.D., Institute of Environmental Research, University of Dortmund, Germany

### Conference cosponsors

Federal Institute for Risk Assessment (BfR), Germany  
Technical University of Berlin  
U.S. EPA National Risk Management Research Laboratory  
USGS Toxic Substances Hydrology Program



# Monday, October 22, 2007

- 7:30 a.m.–5:00 p.m. *Registration*
- 8:30–9:30 a.m. KEYNOTE DAY ONE**  
**Moderator:** Dana Kolpin, Ph.D., USGS, and Robert Masters, NGWA
- 8:30–9:00 a.m. **Potential Risks Associated with the Proposed Widespread Use of the Bird Flu Vaccine, Tamiflu**  
Andrew Singer, Ph.D., Miles Nunn, Ernest Gould, and Andrew Johnson, Centre for Ecology and Hydrology, Oxford
- 9:00–9:30 a.m. **Relative Risk Assessment of Estrogenic Compounds in Water**  
Shane A. Snyder and Dawn Lei, Ph.D., Southern Nevada Water Authority; Jocelyn Hemming, Ph.D., Wisconsin State Laboratory of Hygiene
- 9:30–11:10 a.m. HUMAN AND VETERINARY SOURCES OF PHARMACEUTICALS AND EDCs TO THE ENVIRONMENT**  
**Moderator:** Thomas Heberer, Ph.D., Federal Institute for Risk Assessment
- 9:30–9:55 a.m. **Assessment of Antibiotic Residues in Extracted Biosolids, Manure, Soils, and Streambed Sediment in the United States: A Source Reconnaissance**  
Keith A. Loftin, Michael T. Meyer, and Dana W. Kolpin, USGS
- 9:55–10:20 a.m. **Community Burdens of Methamphetamine and Other Illicit Drugs**  
Aurea C. Chiaia, Laura Power, Daniel L. Sudakin, Ph.D., M.D., and Jennifer A. Field, Ph.D., Oregon State University; Caleb Banta-Green, University of Washington
- 10:20–10:45 a.m. *Break*
- 10:45–11:10 a.m. **Endocrine Disrupting Compounds from Combined Sewer Overflows**  
Jason R. Vogel, Ph.D., David L. Rus, Jill D. Frankforter, and Christopher M. Hobza, USGS; James E. Theiler, City of Omaha Public Works Department
- 11:10 a.m.–12:00 p.m. ANALYTICAL METHODS**  
**Moderator:** Sebastian Zuehlke, University of Dortmund
- 11:10–11:35 a.m. **Thyroid Hormone Disrupting Activity in the Rhine River**  
Peter G.M. Stoks, RIWA, Association of River Water Works; Leo M. Puijker, Kiwa Water Research
- 11:35 a.m.–12:00 p.m. **Enantioselective Determination of Single Nonylphenol Isomers in WWTPs**  
Haifeng Zhang, Sebastian Zuehlke, and M. Spiteller, University of Dortmund; Klaus Guenther, Research Centre Juelich
- 12:00–1:00 p.m. *Lunch (on your own)*
- 1:00–1:50 p.m. ANALYTICAL METHODS (continued)**  
**Moderator:** Sebastian Zuehlke, University of Dortmund
- 1:00–1:25 p.m. **Bioluminescent Yeast-Reporter Systems for Screening Chemicals**  
John Sanseverino, Ph.D., Melanie Eldridge, Alice Layton, Jason Yarbrough, T. Wayne Schultz, and Gary Saylor, University of Tennessee
- 1:25–1:50 p.m. **Development of a Magnetic Particle Enzyme Immunoassay and Its Application to the Measurement of Triclosan and Methyl Triclosan in Water, Waste Water, Soils, and Sediment**  
Fernando Rubio, Lisa Kamp, Jennifer Church, and Richard Slawewski, Abraxis LLC; Weilin Shelver, USDA-ARS
- 1:50–3:30 p.m. UPTAKE OF PHARMACEUTICALS AND EDCs BY TERRESTRIAL AND AQUATIC ORGANISMS**  
**Moderator:** Dana Kolpin, Ph.D., USGS
- 1:50–2:15 p.m. **Occurrence, Fate, and Risk Assessment of Malachite Green Residues in Fish for Human Consumption**  
Thomas Heberer, Ph.D., Andrea Wiersdorf, and Nicole Wordel, Federal Institute for Risk Assessment
- 2:15–2:40 p.m. **Earthworms: Bioaccumulation of Anthropogenic Wastewater Indicator Compounds in Terrestrial Environments**  
Chad A. Kinney, Ph.D., Colorado State University-Pueblo; Edward T. Furlong, Dana W. Kolpin, Ph.D., and Mark R. Burkhardt, USGS; Steven D. Zaugg, Ph.D., and Stephen L. Werner, B.S., USGS-NWQL; Ellen Z. Harrison and Anthony G. Hay, Ph.D., Cornell University; Regina C. Thompson, Eastern Washington University
- 2:40–3:05 p.m. **Assessment of EDCs Exhibiting Estrogen Mimicry Using a Multitiered Approach for Predicting Ligand Structural Requirements**  
James L. Wittliff, Sarah A. Andres, D. Alan Kerr II, and Irina A. Smolenkova, Department of Biochemistry and Molecular Biology, University of Louisville; Stefanie B. Bumpus and Huy T. Le, Department of Chemistry, Institute for Molecular Diversity and Drug Design, University of Louisville
- 3:05–3:20 p.m. *Break*

- 3:20–5:00 p.m. **STEROIDAL HORMONES: SOURCES, FATE, TRANSPORT, AND TREATMENT**  
**Moderator:** Dana Kolpin, Ph.D., USGS
- 3:20–3:45 p.m. **Interaction of Estrogens with Wastewater Solids**  
Ruth Marfil-Vega and Makram T. Suidan, University of Cincinnati
- 3:45–4:10 p.m. **Fate of 17 $\beta$ -Estradiol and Total Estrogenic Activity at Six Municipal Wastewater Treatment Facilities in Arizona**  
Sondra S. Teske, Robert G. Arnold, Ph.D, David Quanrud, Ph.D., and Wendell Ela, University of Arizona; Catherine Propper, Ph.D., and Silke Buschmann, Northern Arizona University
- 4:10–4:35 p.m. **Concentrations of Androstenedione and Testosterone in Manure, Effluent, Soil, and Surface Water**  
Laurence Shore, Kimron Veterinary Institute
- 4:35–5:00 p.m. **Estrogenic Mycotoxins: Overlooked Endocrine Disruptors in the Environment?**  
Niccolo Hartmann (1,2), Thomas D. Bucheli (1), Marianne Erbs (1), Felix E. Wettstein (1), Susanne Vogelgsang (1), Hans-Rudolf Forrer (1), Rene P. Schwarzenbach (2)  
(1 Agroscope Reckenholz-Taenikon Research Station ART; 2 Swiss Federal Institute of Technology Zurich)
- 5:00–6:30 p.m. *Ice-Breaker Reception*

## Tuesday, October 23, 2007

- 7:30 a.m.–1:00 p.m. *Registration*
- 8:00–9:00 a.m. **KEYNOTE DAY TWO**  
**Moderator:** Robert W. Masters, NGWA
- 8:00–8:30 a.m. **Strategies for Micropollutant Reduction in Large River Networks**  
Christopher Ort, Swiss Federal Institute of Aquatic Science and Technology (Eawag)
- 8:30–9:00 a.m. **Tracking Antibiotic Resistance Genes (ARG) as Emerging Environmental Contaminants in the Cache La-Poudre River Watershed**  
Amy Pruden, Ph.D., Colorado State University
- 9:00–11:50 a.m. **OCCURRENCE OF PHARMACEUTICALS AND EDCs IN THE ENVIRONMENT**  
**Moderator:** Robert Masters, NGWA
- 9:00–9:25 a.m. **Pharmaceuticals and Personal Care Products Detected in Sediments of the Lower Columbia River Basin**  
Elena B. Nilsen, Robert R. Rosenbauer, Edward T. Furlong, Mark R. Burkhardt, Stephen Werner, Lisa Greaser, and Mary Noriega, USGS
- 9:25–9:50 a.m. **Group Discussion**
- 9:50–10:15 a.m. **Occurrence of Potential Hormonally Active Compounds in Public Water Supplies and Domestic Wells of the United States, 1991–2005**  
Gregory C. Deltzer and Kimberlee K. Barnes, USGS
- 10:15–10:35 a.m. *Break*
- 10:35–11:00 a.m. **Occurrence of Pharmaceutical and Personal Care Products in Source and Finished Waters in Ontario, Canada**  
Sonya Kleywegt, Ontario Ministry of the Environment
- 11:00–11:25 a.m. **Xenobiotics in Urban Ground Water Systems**  
Mario Schirmer, Kristin Schirmer, Gerhard Strauch, and Frido Reinstorf, UFZ Helmholtz Centre for Environmental Research
- 11:25–11:50 a.m. **Pharmaceuticals and Chloroxylenol in Wastewater Effluent Samples from Across the United States, 2003–2006**  
Patrick J. Phillips, Steven G. Smith, Dana W. Kolpin, Ph.D., and Edward T. Furlong, USGS; Steven D. Zaugg, Ph.D., USGS-NWQL; Kathleen Esposito and Beverley Stinson, Ph.D., Metcalf and Eddy
- 11:50 a.m.–1:15 p.m. *Lunch (provided)*
- 1:15–3:40 p.m. **TRANSPORT AND FATE OF PHARMACEUTICALS AND EDCs IN THE ENVIRONMENT**  
**Moderator:** Alva Daniels, U.S. EPA National Risk Management Research Laboratory

- 1:15–1:40 p.m. **Potential for 4-Nonylphenol Biodegradation in Stream Sediments**  
Paul M. Bradley, Ph.D., Larry B. Barber, Ph.D., Dana W. Kolpin, Ph.D., Peter B. McMahon, Ph.D.,  
and Francis H. Chapelle, Ph.D., USGS
- 1:40–2:05 p.m. **Fate of Pharmaceutical Residues During Ground Water Recharge: Final Results from the Nasri Project (2002–2005)**  
Thomas Heberer, Ph.D., Federal Institute for Risk Assessment; Andy Mechlinski and Britta Fanck, Technical  
University of Berlin
- 2:05–2:30 p.m. **Sulfadiazine and Its Biotransformation Products: Occurrence and Metabolism in Manure  
and Amended Soil**  
Marc Lamshoef, Premasis Sukul, M. Spiteller, and Sebastian Zuehlke, University of Dortmund
- 2:30–2:55 p.m. **Influence of Redox Conditions on Pharmaceutical Transport in Ground Water**  
Carol J. Ptacek, Ph.D., Cherilyn Carrara, David W. Blowes, William D. Robertson, Michael Moncur, and  
Laura G. Groza, University of Waterloo; Edward Sverko, JoAnn Schachtschneider, and Helena Steer,  
Environment Canada NWRI; Traugott Scheytt and Simone Seibert, Technical University Berlin
- 2:55–3:05 p.m. *Break*
- 3:05–3:30 p.m. **The Fate of Polybrominated Diphenyl Ethers in Land-Applied Biosolids**  
Cary Leung, Robert G. Arnold, Ph.D., Wendell P. Ela, Ph.D., Eduardo A. Sáez, Ph.D., and David Quanrud, Ph.D.,  
University of Arizona
- 3:30–5:10 p.m. **INNOVATIVE AND COST-EFFECTIVE REMEDIATION AND TREATMENT TECHNOLOGIES**  
**Moderator:** Robert Masters, NGWA
- 3:30–3:55 p.m. **The Removability of Pharmaceuticals and Other Emerging Organic Micropollutants  
During Drinking Water Production Based on Conventional Treatment Steps**  
Carsten K. Schmidt, Ph.D., and Heinz-Jürgen Brauch, DVGW-Water Technology Center (TZW)
- 3:55–4:20 p.m. **Fate of Selected Endocrine Disruptors During Soil Aquifer Treatment**  
D.M. Quanrud, J. Zhang, M. Thomanek, H. Dong, R.G. Arnold, W.P. Ela, and Eduardo Sáez, University of Arizona
- 4:20–4:45 p.m. **Modeling Removal of Hormones and Xenoestrogens During Conventional Wastewater Treatment**  
Sondra S. Teske and Robert G. Arnold, Ph.D., University of Arizona
- 4:45–5:10 p.m. **Phytoestrogens in Drainage and Surface Waters**  
Corinne C. Hoerger (1,2), Thomas D. Bucheli (1), Marianne Erbs (1),  
Niccolo Hartmann (1), Felix E. Wettstein (1), Konrad Hungerbuehler (2)  
(1 Agroscope Reckenholz-Taenikon Research Station ART; 2 Swiss Federal Institute of Technology Zurich)

