

THE CURRENT

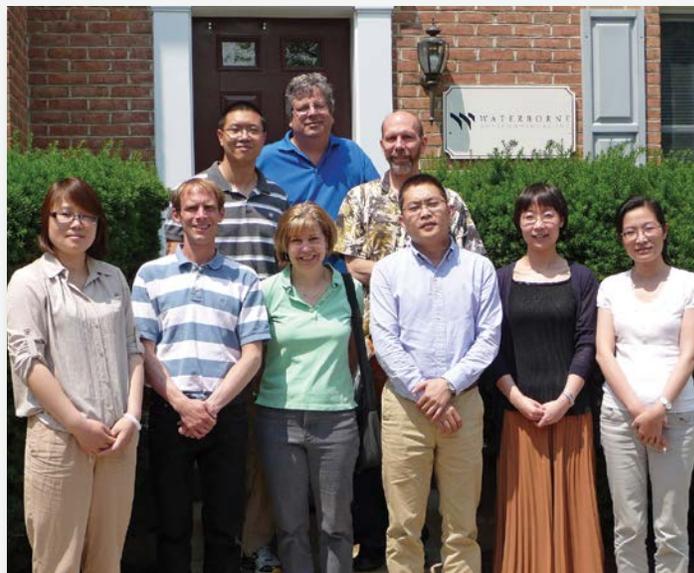
NEWS FROM WATERBORNE ENVIRONMENTAL, INC.

FALL 2013

PESTICIDE RISK ASSESSMENT IN CHINA

In June 2013, Waterborne hosted a workshop at our corporate headquarters in Leesburg, VA to provide hands-on risk assessment modeling training for delegates from the Nanjing Institute of Environmental Sciences (NIES). The workshop was a continuation of a series of collaborations between Waterborne and NIES that date back to 2009 when Waterborne staff initiated the workshop in Nanjing. The workshops are held to exchange information on models, scenarios, and risk assessment procedures that are currently being used in China, the European Union, the United States and Canada to develop modeling approaches and scenarios specific to the environmental and agronomic conditions in China.

The workshops focus on the Pesticide Risk Assessment Exposure Simulation Shell (PRAESS) developed and updated by Waterborne. This modeling platform was designed to evaluate the potential for pesticides to occur in surface water and groundwater resources in the People's Republic of China. Its architecture integrates seamless execution of scenarios and simulation models in the Windows environment. PRAESS currently includes four surface water and two groundwater pesticide exposure scenarios that represent the typical cotton, corn, and rice practices in Central and Eastern China. The shared model input structure also provides flexibility for users to create, update, and maintain databases on pesticide environmental fate properties and expo-



Workshop participants, front row from left to right: Yan Cheng (NIES), Björn Röpke (Bayer), Amy Ritter, Wenzhu Wu (NIES), Yuanqing Bu (NIES), and Ninghui Song (NIES). Back row: Dazhi Mao, Mark Cheplick, and Marty Williams. Not pictured: Wenlin Chen (Syngenta).

continued on page 3

iSTREEM®—A MODEL FOR STEWARDSHIP AND REGULATORY COMPLIANCE FOR “DOWN THE DRAIN” CHEMICALS

Household products that we use daily such as toothpaste, shampoo, and dishwashing detergents contain chemical ingredients that have the potential to end up in rivers and streams. However, it is rare that we consider the fate of the ingredients in these home and personal care products after we use them. We may ask ourselves: How do you meet the challenge of modeling in-river concentrations of ingredients used in home and personal care products used by millions of people on a daily basis across the entire country? How might these concentrations vary based on different wastewater treatment facility technologies, different region-

al market trends, or across downstream drinking water facility intakes? How would you develop a surface water monitoring program for current or future projected usage rates of products containing these chemicals so that the results can be placed into a national or regional context? One answer is iSTREEM® (in-STREAm Exposure Model).

iSTREEM® is a web-based tool sponsored by the American Cleaning Institute (ACI, www.cleaninginstitute.org) which models the concentrations of a chemical that goes down the drain from the use and disposal of home and personal care prod-

ucts. Concentrations are estimated at the discharge points of over 10,000 wastewater treatment plants and downstream receiving waters covering over 200,000 river miles across the continental United States, including 1,700 municipal drinking water facility intakes. The model is a valuable tool for both promoting product stewardship and regulatory compliance for chemical suppliers and manufacturers of formulated products of all sizes.

iSTREEM® has a long history, with origins tracing back to the 1980s and the algorithms used in USEPA's Water Use

continued on page 2

RESEARCH FACILITY AVAILABLE FOR NEW SCIENTIFIC STUDIES

In 2011, the Waterborne team, in conjunction with the Pyrethroid Working Group (PWG) and Research For Hire, constructed a high quality GLP suburban research facility in California. This site consists of six adjacent replicate house front lots. This was an unprecedented undertaking and a massive effort to establish a model housing development for science. PWG released the site at the conclusion of their successful studies so that Waterborne and Research for Hire could market it independently. We see the value in the site and the studies it can support in the areas of household products, personal care, fertilizers, pest control, and water quality. We hope others see the value as we continue to repurpose this facility to help address research or regulatory needs.

The key to this unique facility is the merger of technology and personnel. Research For Hire brings skill as a quality field group. Couple that with a robust monitoring system maintained and designed by Waterborne, and we have a demonstrated recipe for success. A full-site rainfall simulator, lawn irrigation, and automated runoff collection systems are integral in each house lot and, in most cases, controlled from any remote location. A net-

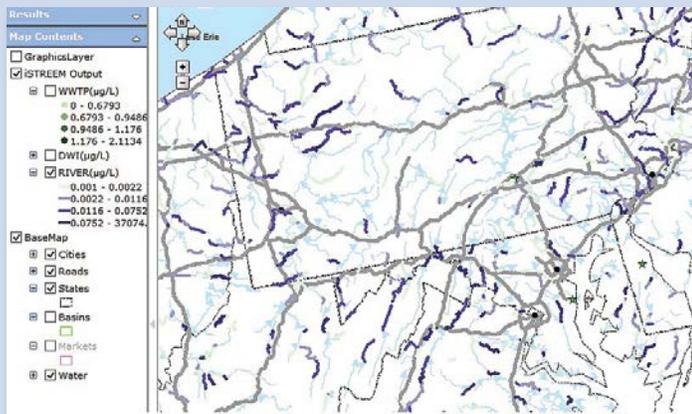


Rainfall simulator in action at the GLP suburban research site in California.

work of sensors and cameras are onsite to collect electronic data and visually document hydrologic processes. Weather parameters, runoff flow rate, and 100 percent runoff capture in gravity arranged underground storage tanks are unique features. All elec-

continued on page 4

iSTREEM® MODEL *continued from page 1*



Calculated stream concentrations of a chemical ingredient contained in a home and personal care product.

Improvement and Impairment model (WUI2). The core of the model (ROUT) was developed by the Procter & Gamble Company and executed originally in a mainframe environment, but later converted to an enterprise-based intranet system with a GIS interface (GIS-ROUT). Since 2010 a web-based version of GIS-ROUT has been supported and made available to the public by ACI (formerly the Soap and Detergent Association, SDA) as iSTREEM®, implemented and hosted by the University of Cincinnati. ACI continues to enhance the model and provide outreach to users by providing training materials and leading courses at professional conferences (such as the upcoming SETAC conference in Nashville, TN). Recently, portions of southern Ontario have been added to the river network to enable a more comprehensive assessment of the areas draining into the Great Lakes.

Waterborne is proud to play a new role in the continued evolution of iSTREEM® by supporting ACI through hosting, user support and future enhancements to the model. In this process we are able to leverage our direct expertise of using iSTREEM® for risk assessment, along with our long-standing experience modeling the transport and fate of pesticides in surface waters. Late this summer we began the process to host the iSTREEM® model on servers located at Waterborne (now accessible at www.iSTREEM.org).

Updates to the data embedded in the model and enhancements to the modeling framework are planned for 2014 and beyond. Data updates include incorporating the latest wastewater treatment facility information from the USEPA Clean Watershed Needs Survey, as well as upgrading the river network data from the older USEPA River Reach File (RF1) to the current version of the National Hydrography Dataset Plus (NHDPlus). This will improve the spatial assignment of treatment facilities and intakes to the river network, as well as allow iSTREEM® to conform to numerous other government and industry activities based on the NHDPlus framework.

These enhancements to the iSTREEM® model lay the foundation for additional improvements and related research initiatives into the future, and we welcome the opportunity to collaborate with and support both current and potential users of this valuable risk assessment tool.

For more information on the iSTREEM® model, please visit <http://www.aciscience.org/>. To learn more about the upcoming training course at SETAC, please go to <http://nashville.setac.org/node/17#pt15>. To create an account and use the model, go to www.iSTREEM.org. 

UPCOMING PRESENTATIONS

SETAC NORTH AMERICA 34TH ANNUAL MEETING NOVEMBER 17–21, 2013 · NASHVILLE, TENNESSEE

- Spatial approaches to refine agricultural chemical use areas for endangered species assessments: Study with California Tiger Salamander. Raghu Vamshi, Joshua Amos, Christopher Holmes*, JiSu Bang. Poster presentation. Tuesday, November 19, 8:00 am, Exhibit Hall.
- A geospatial toolbox for higher-tier endangered species exposure assessments during pesticide registration review. Joshua Amos, Raghu Vamshi, Christopher Holmes*, and Vivienne Seed. Poster presentation. Tuesday, November 19, 8:00 am, Exhibit Hall.
- Addressing uncertainty in aquatic exposure assessments of agricultural pyrethroid use on multiple crops. Amy Ritter*, Dean Desmarteau, Christopher Holmes, Mark Cheplick, Paul Hendley, Michael Dobbs, Scott Jackson, Jeffrey Giddings. Platform presentation. Wednesday, November 20, 8:50 am, Ryman ABC.
- National surface water vulnerability assessment of agricultural pyrethroid use on multiple crops for higher tier exposure modeling. Christopher Holmes*, Joshua Amos, Mark Cheplick, Amy Ritter, Paul Hendley, Michael Dobbs, Scott Jackson, Jeffrey Giddings. Platform presentation. Wednesday, November 20, 10:40 am, Ryman ABC.
- Pyrethroid concentrations and biological effects in the lower American River. Stephen L. Clark*, R. Scott Ogle, Andrew Gantner, Christopher Harbourn, Gregg Hancock, Todd Albertson, Jeffrey Giddings, Gary Mitchell, Aldos Barefoot, Dan Tessier, Michael Dobbs, and Kevin Henry. Platform presentation. Wednesday, November 20, 2:45 pm, Ryman ABC.
- Leveraging Existing Data Resources with Spatial Eco-epidemiology as a Screening-Level Approach in Ecological Risk Assessment: Case Studies in the U.S. and the U.K. Katherine Kapo*, Christopher Holmes, Scott Dyer, Leo Posthuma, Dick de Zwart, Michael Whelan, Richard Williams, Virginie Keller, Andrew Young, Stuart

SETAC BOOTH #328

Visit us at booth #328 in the exhibit hall of the Gaylord Opryland Hotel and Convention Center. If you would like to set up a meeting with one of our staff, contact Katie Betz at info@waterborne-env.com. We look forward to seeing you there.

*Presenter

Marshall, G. Allen Burton, John Murray Bligh. Poster presentation. Thursday, November 21, 8:00 am, Exhibit Hall.

RECENT PRESENTATIONS

- Use of GIS crosswalks to determine relevance of foreign soils to the United States. Shelby Zelonis*. ESRI International User Conference, San Diego, CA. July 8–12, 2013.
- The ScenAT exposure model: a novel spatial method to inform environmental risk assessments of chemicals used in personal care products in China. Juliet Hodges, Oliver Price, Matt Rowson, Christopher Holmes, Raghu Vamshi, Dazhi Mao, and Shelby Zelonis*. ESRI International User Conference, San Diego, CA. July 8–12, 2013.
- Estimating chemical emissions from home and personal care products across Asia. Christopher Holmes, Raghu Vamshi, Shelby Zelonis*, Juliet Hodges, Oliver Price, Matt Rowson, and Taqmina Miah. ESRI International User Conference, San Diego, CA. July 8–12, 2013.
- Use of geospatial data in regulatory decision making for ecological risk assessment of crop protection products in the US, Europe, and China. Christopher Holmes*. International Conference on Agro-Geoinformatics, Fairfax, VA. August 12–16, 2013.
- Factors Affecting the Movement of Pesticides Applied in Residential Settings. R. Jones*, P. Hendley, C. Harbourn, P. Davidson, J. Trask, T. Xu. Pesticide Behaviour in Soils, Water and Air, York, UK. September 2–4, 2013.
- Development of EuroPEARL 2012 to support large-scale exposure assessments and monitoring programs. Gerco Hoogeweg, Paul Sweeney*, Shelby Zelonis, Lucy Fish, Sue Hayes, Paul Hendley. Pesticide Behaviour in Soils, Water and Air, York, UK. September 2–4, 2013.
- Integration of Local Conditions in Risk Assessment. Amy Ritter*, Christopher Holmes. Pesticide Behaviour in Soils, Water and Air, York, UK. September 2–4, 2013. ♪

RECENT ACS PRESENTATIONS

For a list of presentations given at the recent ACS conference, see our previous newsletter or visit our website at www.waterborne-env.com. Presentation abstracts are also available on the website.

CHINA *continued from page 1*

sure scenarios. The model simulations are conducted using 30 years of historical meteorological data and the model outputs can be analyzed in peak, 24-hour, 4-day, 21-day, 60-day, 90-day and annual exposure durations.

At the June workshop, delegates from NIES learned how to run the PRAESS model, create new scenarios and modify scenario parameters to suit their future pesticides registration and man-

agement needs. Their suggestions and comments on the current user interface also facilitated improvements to the modeling platform. The training enhanced the delegates' understanding of the physical and hydrological theories used in modeling processes and provided a technical basis for pesticide risk assessment and environmental management. Björn Röpke from Bayer CropScience and Wenlin Chen from Syngenta Crop Protection provided assistance for the workshop. ♪

WATERBORNE INVOLVEMENT IN CROPLIFE AMERICA

Waterborne continues to be an active member of CLA with the appointment of Matt Kern, Manager of Ecotoxicology, as a co-chair of the Ecotoxicology Working Group (ETXWG).

The ETXWG is a technical subgroup of the CLA Environmental Risk Assessment Committee (ERAC). It serves to track, understand, and advise the ERAC on new developments in regulatory ecotoxicology and related activities within NAFTA regulatory bodies.

Other Waterborne staff participate in CLA's Environmental Exposure Working Group. Through our involvement with CLA and other organizations, we remain committed to working on the many technical and regulatory challenges faced by the crop protection industry. ♪



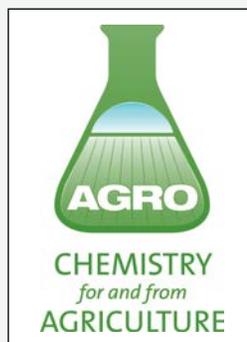
SETAC FOCUSED MEETING ON ENDOCRINE DISRUPTION

Matt Kern of our Ecotoxicology team will chair a session at the upcoming SETAC North America Focused Topic Meeting titled "Endocrine Disrupting Chemical Testing and Risk Assessment Approaches and Implications". The meeting will be held at USEPA in Research Triangle Park, NC on February 5–6, 2014. Sessions will include discussions on the Tier 1 battery of screens involving in vitro, in vivo mammalian and environmental tests. Weight of evidence approaches used in the hazard assessment will be discussed, while working through examples using the results of the entire Tier 1 battery of screening tests. In addition, the Tier 2 battery of tests is nearing the final stages of validation and will be implemented in the course of 2014. Perspectives will be shared on hazard assessment versus risk

continued on page 5

ACS AGRO DIVISION

Starting January 1, 2014, Amy Ritter, Principal Water Resources Engineer, will begin her three-year term on the Executive Committee of the AGRO Division of the American Chemical Society. Her primary duties on the committee will be to serve as a member of the senior management team responsible for assuring the overall growth and financial health of the Division. Please join us in congratulating Amy as she takes on this new role. ♪



PESTICIDE ASSESSMENT IN LATIN AMERICA

Waterborne continues to expand its involvement with ecological risk assessment in Latin America. In May of this year, Amy Ritter travelled to Colombia to make three presentations at a two-day IUPAC Ecological Risk Assessment (ERA) Workshop that was part of the Latin America Pesticide Residue Workshop in Bogotá. As one of her presentations, Amy spoke about the Colombia Exposure Tool that Waterborne developed for CropLife International. Other speakers at the Workshop includ-

ed John Unsworth (Private Consultant), Jan Linders (Private Consultant), David Volz (U. South Carolina), Jenny Moya (DuPont de Colombia S.A.), and Richard Franklin (CropLife Latin America).

The ERA Workshop brings together representatives from industry (including Syngenta, DuPont, and Crop Life Latin America), academia, regulators, and researchers. There were around 50 participants including people from South America, Central America, and the Caribbean. ♪



Bogotá, Colombia

RESEARCH FACILITY *continued from page 2*

tronic data are available real time via wireless networks. Our team can be two or 2,000 miles away controlling the site! This capability has allowed our experienced team to control costs and maintain a high level of study quality and completeness.

Waterborne and Research For Hire are excited to offer this state-of-the-art research facility for new studies. The facility is in excellent condition; with water, electricity, and a healthy lawn

available at each of the house lots. Studies investigating interactions with most types of common building materials (e.g., vinyl siding, roofing materials), landscape practice (e.g., flower gardens around house perimeter, mulching along driveway), or chemical treatment to turf (e.g. fertilizers) or concrete (e.g. automobile cleaning products) are great fits for this research facility. Please contact Paul Davidson or Les Carver for more information. ♪

NEW HIRES



Abby Lynn joined Waterborne in September 2013 as a Staff Scientist and is currently working out of Centralia, Missouri. She has a B.S. in Agribusiness Management from the University of Missouri. In her prior work, Abby established and maintained relationships with growers; communicating technical information regarding crop protection, regulatory, and environmental topics. She has also worked directly with government agencies, consultants and agribusiness companies in vulnerable watersheds to evaluate, educate and help track the environmental fate of agricultural chemicals. Abby has implemented public relations campaigns that promote stewardship and environmental responsibility while still being cost-effective to farmers. She has experience with tracking farm data to accompany science-based studies to show impact. Abby will assist Waterborne in implementing adoptable and integrated solutions through sound science, education, stewardship and promoting useful practices to improve soil and water management.

PROMOTIONS



Shelby Zelonis has been promoted to Project GIS Specialist. She joined Waterborne in July 2011. As part of the Data Technologies team, Shelby has worked on a wide variety of projects including BMP assessments, ecoregion crosswalks, groundwater modeling, and vulnerability studies. In the past year Shelby has been instrumental in working on increasingly more complex GIS projects ranging from soil crosswalks to right-of-way label assessments. She has shown the ability to organize and manage projects, complete team-based work products, and communicate results to clients. Shelby is also very organized, efficient in getting work done, and a talented writer.

SETAC MEETING *continued from page 4*

assessment using case studies with comparisons made to approaches elsewhere in the world. A desired outcome from the meeting will be the generation of a formal SETAC statement on the use of hazard versus risk when evaluating endocrine disrupting chemicals. The website for the meeting is available at <http://endocrine.setac.org/>. 🌿



AWARDS

Waterborne intern **Julie Honegger** received honorable mention in the Most Valuable Graduate Intern category at the University of Illinois Research Park's Annual Intern award ceremony on August 1st. Julie was a key field personnel contributor to a major study, performed laboratory work, and learned new programming language to write critical datalogger programs. Julie has been accepted to the University of Illinois' Agricultural and Biological Engineering MS Program. Travis Moore and Colleen Moloney, Waterborne interns, were also nominated for their outstanding contribution in the Champaign, IL office.



Megan Cox, Julie Honegger, and Luke Zwilling.

WATERBORNE BABIES

Gary Burch and his wife, Trista are the proud parents of a new baby boy, Caleb Jeremiah. He was born July 30, 2013 at 12:19 am, weighing 10 lbs 11 oz and 22 inches long.

Dazhi Mao and his wife, Xinyu have a new baby boy. Ethan Yisen was born July 1, 2013 at 9:09 am, weighing 8 lbs 15 oz and 22 inches long.

Congratulations and best wishes to all!

WATERBORNE MARRIAGES

Vivienne Seed and Jimmy Sclater were married on May 19, 2013 at a beautiful beachfront home in Nags Head, NC.

Brad Sliz and Jackie Ziegler were married June 8, 2013 in Deerfield, IL and enjoyed their honeymoon in Turks and Caicos.

Please join us in congratulating them! 🌿

WEB-BASED MAPPING—STORY MAPS

In early 2005, Google revolutionized the way people access information using maps with the introduction of its new application, Google Maps. Who hasn't used Google Maps to get directions, find restaurants, or view landscape features such as open fields and forests in the satellite imagery?

With the increased popularity of Google Maps, the traditional GIS software industry has been scrambling to catch up. ESRI was "first to market" and has pushed the concept of web-based mapping since the late 1990's with a string of solutions ranging from the Geography Network to ArcWeb Services. However, these efforts were directed at GIS professionals and struggled to catch on. Most recently, though, ESRI has developed a new platform for web-based mapping called ArcGIS Online. ArcGIS Online is designed with the consumer in mind. Like Google Maps, it allows a broad range of users to interact with maps regardless of GIS experience. In the past year, it has greatly matured and now provides a wide variety of quality and high resolution datasets that both the general consumer and GIS professional can enjoy.

As part of ArcGIS Online, ESRI introduced a new concept: the story map. Story maps combine web maps with web applica-

tions and can incorporate text, multimedia and interactive functions to present a particular message to a large user group.

With an increased volume of data and larger geographic extents, it is a challenge to generate high-quality static maps that show enough detail to interpret the message. Story maps provide us with a way to relay this information in more detail and in a content rich and dynamic environment. One beneficial aspect of the story map framework is that several templates are available that enable you to compare datasets, provide a swipe function or allow you to tour around a map. A few examples of Waterborne story maps can be found in our map gallery at www.waterborne-env.com/map-gallery.asp. We look forward to introducing you to this exciting concept and how you might apply it to your work.

Gerco Hoogeweg, Ph.D.

Go forth and map

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THE CURRENT

NEWS FROM WATERBORNE
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WATERBORNE ENVIRONMENTAL, INC.
PROVIDING INNOVATIVE SOLUTIONS SINCE 1993