EPA Office of Water
Water Research Quarterly
April - June 2010 No. 2010-1

Table of Contents

Protecting Aquatic Life and Human Health from Chemicals and Microbes in Water

From EPA

Four IRIS Assessments Placed on Hold Pending Review. EPA placed ongoing IRIS health effects assessments for methanol, MTBE, ETBE, and acrylonitrile on hold.

Go to Article or www.epa.gov/iris

IRIS Toxicological Review of Formaldehyde-Inhalation Assessment. EPA released for expert peer review a draft document addressing non-cancer and cancer human health effects that may result from chronic inhalation exposure to formaldehyde.

Go to Report or www.epa.gov/iris

EPA - SAB Review of EPA's Research Scoping Document Related to Hydraulic Fracturing.

Go to Report or www.epa.gov/sab

EPA - SAB Briefings on EPA's Risk Assessment Activities.

Go to Report or www.epa.gov/sab

EPA Moves to Terminate All Uses of Insecticide Endosulfan to Protect Health of Farmworkers and Wildlife. Endosulfan, which is used on vegetables, fruits, and cotton, can pose unacceptable neurological and reproductive risks.

Go to Report or www.epa.gov/pesticides/regulating

Introducing the Water Research Quarterly: A Note from the Editor

I won't usually take up space in the *Quarterly* with *A Note from the Editor* as the real estate of the *Quarterly* is too valuable. But, for our first edition, I'd like to give an introduction to this new internal publication.

The *Water Research Quarterly* (WRQ) was born from the desire of Water's leadership to be kept current on the research and science activities taking place inside and outside of the Agency that may impact our own investigations, decisions, policy, or guidance. With that challenge in place, we evaluated mechanisms other research and science policy organizations use to get relevant and timely information to their stakeholders. We also reached out to ORD, USGS, Water Environment Research Foundation (WERF), Water Research Foundation (WaterRF, formerly AwwaRF), and National Science Foundation (NSF) to determine how to engage in information exchange and bring their efforts to light in the *Quarterly*. Working with Michael Fry, of the EPA Library, we set up a monthly literature search on all the journals Water program staff identified as being important to their projects.

Initially we were concerned we wouldn't have enough content for a *Quarterly*. We were hugely mistaken. Project and product highlights as well as upcoming meetings and RfPs were offered by ORD's National Program Directors and pulled from ORD and other Agency websites, skimmed from the above mentioned collaborators' websites and newsletters, and from over 500 journal hits (just for the month of June). Our original concept was a one-page, double-sided, flyer. Such an abbreviated publication would

(continued on last page)

Assessing the Impact of Urban Runoff in Recreational Beaches in South Carolina and Florida Using Culturable and QPCR Fecal Indicator. Molina, M. et al., 2010. American Society for Microbiology Meeting, San Diego, CA, May 23-27.

Go to Report

Pharmaceutical Companies Provide EPA 100 Drugs to Help Predict Toxicity. In ongoing validation of ToxCast screening tool EPA will assess data for 100 drugs provided by several manufacturers.

Go to Article or www.epa.gov/ncct/toxcast

The Next Generation of Drinking Water Disinfection By-Products. Richardson, S.D., 2010. 7th National Monitoring Conference, Denver, CO, April 25-29. "Emerging," unregulated DBPs are more cytotoxic and genotoxic than currently-regulated DBPs.

Go to Report

EPA and Other Federal Agencies Collaborate to Improve Chemical Screening. EPA is teaming with the National Toxicology Program, the National Chemical Genomics Center, and the Food and Drug Administration on the "Tox21 collaboration."

Go to Article or www.epa.gov/ncct/Tox21

From Collaborators

New Study Sheds Light on Possible Environmental Sources of NDMA. Study examines how consumer products may form harmful substances in wastewater.

Go to News Release, Article, or pubs.acs.org/journal/esthag

CDC Reports Increase in Cryptosporidiosis. The number of reported cases of cryptosporidiosis increased 80% from 2006 to 2007 and then decreased 10% in 2008.

Go to Report or www.cdc.gov/mmwr/mmwr_ss

Workshop Report on Managing Contaminants of Emerging Concerns in California. Workshop report by a consortium of nonprofits and universities; highlights strategies to address CECs in California.

Go to Report or www.nwri-usa.org/CECs.htm

Reducing Environmental Cancer Risk, What We Can Do Now. The President's Cancer Panel's annual report 2008-2009.

Go to Report or deainfo.nci.nih.gov

Breast Cancer and the Environment: The Scientific Evidence, Research Methodology, and Future Directions. The Institute of Medicine of the National Academies will examine evidence for environmental factors that may increase risk.

Go to Report or www.iom.edu

Source, Fate and Transport of Endocrine Disruptors, Pharmaceuticals, and Personal Care Products in Drinking Water Sources in California. The National Water Research Institute study finds low levels of PPCPs in the drinking water sources that serve over 25 million southern Californians.

Go to Report or www.nwri-usa.org/CECs.htm

Drinking Water Contaminants and Cancer. National Cancer Institute is studying health effects of high nitrate, chlorination byproduct, and arsenic levels in relation to risk of developing specific cancers.

Go to Report or dceg.cancer.gov/oeeb/research

Antidepressants in Water Make Shrimp Suicidal. Authors found that exposure to antidepressant drugs makes shrimp more likely to place themselves in life-threatening situations.

Go to News Release, Article, or *Aquatic Toxicology*

From the Journals

The Good, the Bad, and the Volatile: Can We Have Both Healthy Pools and Healthy People? LaKind, J.S., S.D. Richardson, and B.C. Blount, 2010. *Environmental Science and Technology*, 44(9), 3205-3210.

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Estimating Perchlorate Exposure from Food and Tap Water Based on US Biomonitoring and Occurrence Data. Huber, D.R., et al., 2010. *Journal of Exposure Science and Environmental Epidemiology*, 10:1038.

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Disease Susceptibility of Salmon Exposed to Polybrominated Diphenyl Ethers (PBDEs). Arkoosh, M., et al., 2010. *Aquatic Toxicology*, 98(1), 51-59.

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Comparative Toxicity of *Prymnesium parvum* in Inland Water. Brooks, B.W., et al., 2010. *Journal of the American Water Resources Association*, 46(1), 45-62.

Go to Article

Determination of Perfluorinated Compounds in the Upper Mississippi River Basin. Nakayama, S.F., et al., 2010. *Environmental Science and Technology*, 44(11), 4103-4109.

Go to Article

Analysis of Eight Oil Spill Dispersants Using Rapid, *In Vitro* Tests for Endocrine and Other Biological Activity. Judson, R.S., et al., 2010. *Environmental Science and Technology*, 44(15), 5979-5985.

Go to Article

***In Vitro* Screening of Environmental Chemicals for Targeted Testing Prioritization: The ToxCast Project.** Judson, R., et al., 2010. *Environmental Health Perspectives*, 118(4), 485-92.

Go to Article

Presence of Pathogens and Indicator Microbes at a Non-Point Source Subtropical Recreational Marine Beach. Abdelzaher, A.M., et al., 2010. *Applied and Environmental Microbiology*, 76(3), 724-732.

Go to Article

Linking Pathogen Sources to Water Quality in Small Urban Streams. Chin, D.A., 2010. *Journal of Environmental Engineering*, 136(2), 249-253.

Go to Article

Effect of Sample Filtration on the Quality of Monitoring Data Reported for Organic Compounds During Wastewater Treatment. Deo, R.P., and R.U. Halden, 2010. *Journal of Environmental Monitoring*, 12(2), 478-483.

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An Endocrine Disrupting Chemical Changes Courtship and Parental Care in the Sand Goby. Saaristo, M., et al., 2010. *Aquatic Toxicology*, 97(4), 285-292.

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Sediment Contaminant Chemistry and Toxicity of Freshwater Urban Wetlands in Southern California. Brown, J.S., et al., 2010. *Journal of the American Water Resources Association*, 46(2), 367-384.

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More Iodine or Less Perchlorate? Renner R., 2010. *Environmental Health Perspectives*, 118(7), a289.

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Bioaccumulation of Arsenic from Water and Sediment by a Deposit-Feeding Polychaete (*Arenicola marina*): A Biodynamic Modelling Approach. Casado-Martinez, M.C., et al., 2010. *Aquatic Toxicology*, 98(1), 34-43.

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Rate of Decline in Serum PFOA Concentrations after Granular Activated Carbon Filtration at Two Public Water Systems in Ohio and West Virginia. Bartell S.M., et al., 2010. *Environmental Health Perspectives*, 118(2), 222-228.

Go to Article

A Comparison of the Copper Sensitivity of Six Invertebrate Species in Ambient Salt Water of Varying Dissolved Organic Matter Concentrations. Arnold W.R., et al., 2010. *Environmental Toxicology and Chemistry*, 29(2), 311-319.

Go to Article

Distribution of Virulence Factors and Molecular Fingerprinting of *Aeromonas* Species Isolates from Water and Clinical Samples: Suggestive Evidence of Water-to-Human Transmission. Khajanchi, B.K., et al., 2010. *Applied and Environmental Microbiology*, 76(7), 2313-2325.

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Genes Encoding Tetracycline Resistance in a Full-Scale Municipal Wastewater Treatment Plant Investigated During One Year. Börjesson, S., et al., 2010. *Journal of Water and Health*, 8(2), 247-56.

Go to Article

Species-Specific Accumulation of Polybrominated Diphenyl Ether Flame Retardants in Birds of Prey from the Chesapeake Bay Region, USA. Chen, D., et al., 2010. *Environmental Pollution*, 158(5), 1883-1889.

Go to Article

Using Residential History and Groundwater Modeling to Examine Drinking Water Exposure and Breast Cancer. Gallagher, L.G., et al., 2010. *Environmental Health Perspectives*, 118(6), 749-755.

Go to Article

QSAR Modeling of Acute Toxicity on Mammals Caused by Aromatic Compounds: the Case Study Using Oral LD_{50} for Rats. Rasulev, B., et al., 2010. *Journal of Environmental Monitoring*, 12, 1037-1044.

Go to Article

Profiles and Some Initial Identifications of (Anti) Androgenic Compounds in Fish Exposed to Wastewater Treatment Works Effluents. Hill, E., et al., 2010. *Environmental Science & Technology*, 44(3), 1137-1143.

Go to Article

Regrowth of Potential Opportunistic Pathogens and Algae in Reclaimed-Water Distribution Systems. Jjemba, P.K., et al., 2010. *Applied and Environmental Microbiology*, 76(13), 4169-4178.

Go to Article

Toxicity of Dispersed Weathered Crude Oil to Early Life Stages of Atlantic Herring (*Clupea harengus*). McIntosh, S., et al., 2010. *Environmental Toxicology and Chemistry*, 29(5), 1160-1167.

Go to Article

Speciation and Reactivity of Cisplatin in River Water and Seawater. Curtis, et al., 2010. *Environmental Science & Technology*, 44(9), 3345-3350.

Go to Article

Biomarker Responses in Polar Cod (*Boreogadus saida*) Exposed to the Water Soluble Fraction of Crude Oil. Nahrgang, J., et al., 2010. *Aquatic Toxicology*, 97(3), 234-242.

Go to Article

Photo-Induced Fluorescence of Magnesium Derivatives of Tetracycline Antibiotics in Wastewater Samples. Pena, A., et al., 2010. *Journal of Hazardous Materials*, 179(1-3), 409-414.

Go to Article

Gene Transcription in *Daphnia magna*: Effects of Acute Exposure to a Carbamate Insecticide and an Acetanilide Herbicide. Pereira, J.L., et al., 2010. *Aquatic Toxicology*, 97(3), 268-276.

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Perfluorinated Compounds in Whole Blood Samples from Infants, Children, and Adults in China. Zhang, T., et al., 2010. *Environmental Science & Technology*, 44(11), 4341-4347.

Go to Article

Upcoming Meetings

Society of Environmental Toxicology and Chemistry (SETAC) North America 31st Annual Meeting. November 7-11, 2010 in Portland, OR.

Go to portland.setac.org

American Public Health Association Meeting 138th Annual Meeting. Theme is Social Justice. November 6-10, 2010 in Denver, CO.

Go to www.apha.org/meetings

30th International North American Lake Management Society Symposium. November 3-5, 2010 in Oklahoma City, OK.

Go to Meeting Page or www.nalms.org

Water Quality Technology Conference. November 14-17, 2010 in Savannah, GA.

Go to Meeting Page or www.awwa.org

Innovative and Affordable Tools and Technologies for Sustainable Public Health Protection

From EPA

Priorities of the Distribution System Research and Information Collection Partnership. EPA and WRF.

Go to Report or www.epa.gov/safewater

Impact of Wet-Weather Peak Flow Blending on Disinfection and Treatment: A Case Study at Three Wastewater Treatment Plants. 2010. EPA/600/R-10/003.

Go to Article or www.epa.gov/ednnrmrl

Arsenic Removal from Drinking Water by Coagulation/Filtration: U.S. EPA Demonstration Project at Town of Felton, DE, Final Performance Evaluation Report. 2010. EPA/600/R-10/039.

Go to Article or www.epa.gov/nrmrl/wswrd/dw

Best Practice Guide on the Control of Lead in Drinking Water. Hayes, C., et al. (including M.R. Schock), 2010. IWA Publishing, London, UK, 85 p.

Go to Guide or water.epa.gov/drink/info/lead

Water Quality Event Detection Systems for Drinking Water Contamination Warning Systems: Development, Testing, and Application of CANARY. Murray, R., et al., 2010. EPA/600/R-10/036.

Go to Article or www.epa.gov/nhsrc

Climate Ready Water Utilities Toolbox. Searchable database for water utilities to identify climate change-related impacts and target resources.

Go to Webpage or water.epa.gov/infrastructure

State of Technology Report for Force Main Rehabilitation. Morrison, R., et al., 2010. EPA/600/R-10/044. From ORD-NRMRL.

Go to Report or www.epa.gov/nrmrl

From Collaborators

WERF - Research Begins Under Multimillion-Dollar EPA Cooperative Agreement. Examining tools and procedures to cost-effectively improve wastewater infrastructure.

Go to Article or www.werf.org

New Journal: Desalination and Water Reuse. International Desalination Association.

Go to Journal or www.idadesal.org

Regulatory Aspects of Direct Potable Reuse in California. National Water Research Institute

Go to Report or www.nwri-usa.org

U.S. Army Corps of Engineers Launches Responses to Climate Change Website. Looks at climate change/variability and the need to reduce potential vulnerabilities of water resources and infrastructure.

Go to www.corpsclimate.us

Water Research Foundation Selects Five Unsolicited Research Projects for 2010.

- Monochloramine Cometabolism: The Missing Link in Understanding Disinfectant Loss During Nitrification Episodes in Distribution Systems
- Water Utility Executive Leadership for the 21st Century
- Transformation of Amines to Nitrosamines in Activated Carbons: Implications for Nitrosamine Analysis and Water Purification
- A Comprehensive Field-Scale Distribution System Network Model Assessment and Analysis: Hydraulics and Water Quality
- Removal of Perfluorinated Compounds by Powdered Activated Carbon Blends, Superfine Powdered Activated Carbon, and Magnetic Anion Exchange Resins

Go to Article or www.waterresearchfoundation.org

WateReuse Research Foundation Announces Nine New Research Projects

- Cost of Over-Treating Reclaimed and Other Water
- Graywater Reuse Issues
- Regulatory Workshop: Desalination Permitting
- Minimizing impingement and/or entrainment of Existing Intakes
- Role of Retention Time in the Environmental Buffer of Indirect Potable Reuse Projects
- Lower Energy Treatment Schemes for Water Reuse
- Bio-analytical Techniques to Assess the Potential Human Health Impacts of Reclaimed Water
- Implementing Reuse in New Development (Guide to Achieve LEED / Sustainability Goals)
- Selecting Salt, Metal, Radionuclide, and other Metal Recovery Strategies (Guide)

Go to Article or www.watereuse.org/foundation

Standard to Measure Water Use 'Footprint'. The International Organization of Standardization is working on a proposed global norm to allow companies to determine their usage of freshwater, or water 'footprint.'

Go to Article or www.iso.org

From the Journals

A "Utility for the 21st Century" - Creating a Path Toward Sustainability. Adams, L., and P. Bigner, 2010. *Journal American Water Works Association*, 102(5), 46-52.

Go to Article

Evaluation of Storm-Water Wetlands in Series in Piedmont North Carolina. Hathaway, J.M., and W.F. Hunt, 2010. *Journal of Environmental Engineering*, 136(1), 140-146.

Go to Article

Removing Cadmium Ions from Water via Nanoparticle-Enhanced Ultrafiltration. Jawor, A., and E.M.V. Hoek, 2010. *Environmental Science & Technology*, 44(7), 2570-2576.

Go to Article

Modeling Urban Storm-Water Quality Treatment: Model Development and Application to a Surface Sand Filter. Avellaneda, P., et al., 2010. *Journal of Environmental Engineering*, 136(1), 68-77.

Go to Article

Observed and Modeled Performances of Prototype Green Roof Test Plots Subjected to Simulated Low- and High-Intensity Precipitations in a Laboratory Experiment. Alfredo, K., et al., 2010. *Journal of Hydrologic Engineering*, 15(6), 444-457.

Go to Article

A Game Plan for Aging Water Infrastructure. Baird, G.M., 2010. *Journal American Water Works Association*, 102(4), 74-82.

Go to Article

Nitrogen, Phosphorus, and Bacteria Tile and Groundwater Quality Following Direct Injection of Dewatered Municipal Biosolids into Soil. Gottschall, N.E., et al., 2010. *Journal of Environmental Quality*, 38(3), 1066-1075.

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California Passes Water Management Legislation for the Future. Baker, A., 2010. *Journal American Water Works Association*, 102(1), 16-18.

Go to Article

Modeling Techniques of Best Management Practices: Rain Barrels and Rain Gardens Using EPA SWMM-5. Abi Aad, M.P., M.T. Suidan, and W.D. Shuster, 2010. *Journal of Hydrologic Engineering*, 15(6), 434-443.

Go to Article

Proteomic Analysis of Ethene-Enriched Groundwater Microcosms from a Vinyl Chloride-Contaminated Site. Chuang, A.S., et al., 2010. *Environmental Science & Technology*, 44(5), 1594-1601.

Go to Article

Effect of Protease and Cellulase on the Characteristic of Activated Sludge. Pei, H.Y., et al., 2010. *Journal of Hazardous Materials*, 178(1-3), 397-403.

Go to Article

Direct and Indirect Water Withdrawals for US Industrial Sectors. Blackhurst, M., et al., 2010. *Environmental Science & Technology*, 44(6), 2126-2130.

Go to Article

Influence of Flue Gas Sparging on the Performance of High Rate Algae Ponds Treating Agro-Industrial Wastewaters. Godos, L., et al., 2010. *Journal of Hazardous Materials*, 179(1-3), 1049-1054.

Go to Article

Using Multi-Criteria Decision Analysis to Assess the Vulnerability of Drinking Water Utilities. Joerin, F., et al., 2010. *Environmental Monitoring and Assessment*, 166(1-4), 313-330.

Go to Article

Current State and Future Development of Blue Water Availability and Blue Water Demand: A View at Seven Case Studies. Menzel, L., and A. Matovelle, 2010. *Journal of Hydrology*, 384(3-4), 245-263.

Go to Article

Scaling of Economic Benefits from Green Roof Implementation in Washington, DC. Niu, H., et al., 2010. *Environmental Science & Technology*, 44(11), 4302-4308.

Go to Article

The Evaporative Drying of Sludge by Immersion in Hot Oil: Effects of Oil Type and Temperature. Ohm, T.I., et al., 2010. *Journal of Hazardous Materials*, 178(1-3), 483-488.

Go to Article

Upcoming Meetings

Managed Aquifer Recharge Symposium. January 25-26, 2011, in Irvine, CA. Abstracts due September 15, 2010. Sponsors: Water Research Foundation (WaterRF), Orange County Water District, and the National Water Research Institute.

Go to www.nwri-usa.org/RechargeSymposium.htm

Water Quality Technology Conference. November 14-17, 2010 in Savannah, GA.

Go to Meeting Page or www.awwa.org

25th Annual WateReuse Symposium. September 12-15, 2010 in Washington, DC.

Go to www.watereuse.org/conferences/symposium/25

American Water Summit 2010. November 3-4, 2010 in Washington, DC.

Go to www.americanwatersummit.com

GWPC - Water and Energy Sustainability Symposium: Water and Energy in Changing Climates. Groundwater Protection Council, September 26-29, 2010 in Pittsburgh, PA.

Go to waterenergy2010.com

Water Reuse and Desalination: Water Scarcity Solutions for the 21st Century. November 15-17, 2010 in Sydney, Australia.

Go to www.watereuse.org/conferences/australia/10

Ecological Systems Approach to Protect and Restore Sustainable Water Quality and Water Quantity on a Watershed Basis

From EPA

ORD-NCEA - CADDIS Updates. Changes and improvements include reorganization and new stressor models, case studies, and guidance.

Go to Report or caddis-review.tetratech-ffx.com

EPA - SAB Draft Report: Reactive Nitrogen in the United States; An Analysis of Inputs, Flows, Consequences, and Management Options.

Go to Report or www.epa.gov/sab

EPA - SAB Panel: Review of Ecological Impacts Associated with Mountaintop Mining and Valley-Fill Operations.

Go to Report or www.epa.gov/sab

Wetlands as Sinks for Reactive Nitrogen at Continental and Global Scales. Jordan, S.J., et al., *Ecological Applications*, in review. Wetland studies compiled to evaluate factors that influence removal rates.

Stephen Jordan, Ph.D., NHEERL Gulf Ecology Division, jordan.steve@epa.gov, 850-934-9350.

Calculating the Ecosystem Service of Water Storage in Isolated Wetlands Using LiDAR in North Central Florida, USA. Lane, C.R., and E. D'Amico, 2010. *Wetlands,* accepted. Developing link between isolated wetlands and navigable waters.

Go to Article

Estuary Programs to Address Climate Change Issues. Nine projects, managed by seven estuary programs, to assess climate change vulnerabilities.

Go to Article or www.epa.gov/cre

Next Steps for Chesapeake Bay "Pollution Diet." Watershed-wide nutrient limits for nitrogen (187.4 million lbs) and phosphorus (12.5 million lbs).

Go to Article or www.epa.gov/chesapeakebaytmdl

From Collaborators

NRC - Management and Effects of Coalbed Methane Development and Produced Water in the Western United States.

Go to Report or dels.nas.edu

NRC - Sustainable Water and Environmental Management in the California Bay-Delta. New committee formed.

Go to Report or dels.nas.edu/wstb

Colorado River Water Availability Study. Analysis of impacts of climate change on the local level.

Go to Report or www.cwcb.state.co.us

USGS - Aquatic Life Declines at Early Stages of Urban Development. Pollution-sensitive fish and insects decline in urban/suburban streams exposed to pollution levels historically considered to be protective.

Go to Article or www.usgs.gov

USGS - Responses of Benthic Macroinvertebrates to Urbanization in Nine Metropolitan Areas of the Conterminous United States. Third Interagency Conference on Research in the Watersheds.

Go to Article or www.usgs.gov

USGS - Mercury Trends in Fish from Rivers and Lakes in the United States, 1969-2005. Chalmers, A.T., et al., *Environmental Monitoring and Assessment*. Mercury concentrations in fish decreased in the 1970s and 80s with variable trends from 1996-2005. Upward mercury trends in fish occurred in the Southeast.

Go to Article or water.usgs.gov/nawqa/mercury

East Lake Wetland Interface Study. Understanding the interface between urban development and conservation values of the Wetland Nature Reserves.

Go to Article or www.csiro.au

USDA - Confirms Conservation Practices Work on Farms in Upper Mississippi River Basin. Review of conservation practices of farmers/ranchers and impacts on environmental health of soil and water.

Go to Article or www.usda.gov

U.S. Forest Service - Water, Climate Change, and Forests: Watershed Stewardship for a Changing Climate. Healthy watersheds, especially in forested areas, can sustain climate changes and keep ecosystems functioning.

Go to Report or www.fs.fed.us

Draft ETV Protocol for Ballast Water Treatment Technologies. Protocol from EPA's Environment Technology Verification Program that should reduce the risk of introducing aquatic invasive species.

Go to Report or www.nsf.org

Lake Superior, a Huge Natural Climate Change Gauge, Is Running a Fever. Data showed water temperatures in July to be 15 °F higher than normal; also showed diminishing winter ice cover.

Go to Article

From the Journals

Complex Hydraulic and Substrate Variables Limit Freshwater Mussel Species Richness and Abundance. Allen, D., and C. Vaughn, 2010. *Journal of the North American Benthological Society*, 29(2), 383-394.

Go to Article

Sequestering CO_2 by Mineral Carbonation: Stability Against Acid Rain Exposure. Allen, D., and G. Brent, 2010. *Environmental Science & Technology*, 44(7), 2735-2739.

Go to Article

Changes in Patterns of Streamflow from Unregulated Watersheds in Idaho, Western Wyoming, and Northern Nevada. Clark, G.M., 2010. *Journal of the American Water Resources Association*, 46(3), 486-497.

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Mesohabitat-Specific Macroinvertebrate Assemblage Responses to Water Quality Variation in Mid-Continent (North America) Great Rivers. Angradi, T., and T. Jicha, 2010. *Ecological Indicators*, 10(5), 943-954.

Go to Article

The Response of Stream Fish to Local and Reach-Scale Variation in the Occurrence of a Benthic Aquatic Macrophyte. Argentina, J.E., et al., 2010. *Freshwater Biology*, 55(3), 643-653.

Go to Article

Fire, Flow and Dynamic Equilibrium in Stream Macroinvertebrate Communities. Arkle, R.S., et al., 2010. *Freshwater Biology*, 55(2), 299-314.

Go to Article

Review of Pesticide Retention Processes Occurring in Buffer Strips Receiving Agricultural Runoff. Arora, K., et al., 2010. *Journal of the American Water Resources Association*, 46(3), 618-647.

Go to Article

Trends in Agricultural Impact and Recovery of Wetlands in Prairie Canada. Bartzen, B.A., et al., 2010. *Ecological Applications*, 20(2), 525-538.

Go to Article

Are Wetland Regulations Cost Effective for Species Protection? A Case Study of Amphibian Metapopulations. Bauer, D.M., et al., 2010. *Ecological Applications*, 20(3), 798-815.

Go to Article

Process-Based Principles for Restoring River Ecosystems. Beechie, T.J., et al., 2010. *Bioscience*, 60(3), 209-222.

Go to Article

Integration of Science and Monitoring of River Ecosystem Health to Guide Investments in Catchment Protection and Rehabilitation. Bunn, S.E, et al., 2010. *Freshwater Biology*, 55, 223-240.

Go to Article

Reservoir Computing Approach to Great Lakes Water Level Forecasting. Coulibaly, P., 2010. *Journal of Hydrology*, 381(1-2), 76-88.

Go to Article

Structural and Functional Characteristics of Natural and Constructed Channels Draining a Reclaimed Mountaintop Removal and Valley Fill Coal Mine. Fritz, K.M., et al., 2010. *Journal of the North American Benthological Society*, 29(2), 673-689. MTR/VF activities harmful to headwater streams; further study needed.

Go to Article

Integrated Water and Sediment Flow Simulation and Forecasting Models for River Reaches. Choudhury, P., and B.S. Sil, 2010. *Journal of Hydrology*, 385(1-4), 313-322.

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Metabolic Patch Dynamics in Small Headwater Streams: Exploring Spatial and Temporal Variability in Benthic Processes. Clapcott, J.E., and L.A. Barmuta, 2010. *Freshwater Biology*, 55(4), 806-824.

Go to Article

Building Local Community Commitment to Wetlands Restoration: A Case Study of the Cache River Wetlands in Southern Illinois, USA. Davenport, M.A., et al., 2010. *Environmental Management*, 45(4), 711-722.

Go to Article

Multiple Stressors on Water Availability at Global to Catchment Scales: Understanding Human Impact on Nutrient Cycles to Protect Water Quality and Water Availability in the Long Term. Heathwaite, A.L., 2010. *Freshwater Biology*, 55, 241-257.

Go to Article

Impacts of Environmental Changes on the Hydrology and Sedimentary Processes at the Confluence of St. Lawrence Tributaries: Potential Effects on Fluvial Ecosystems. Boyer, C., et al., 2010. *Hydrobiologia*, 647(1), 163-183.

Go to Article

Food Webs and the Upper Mississippi River: Contributions to our Understanding of Ecosystem Function in Large Rivers. Delong, M.D., 2010. *Hydrobiologia*, 640(1), 89-101.

Go to Article

Differences in Wetland Nitrogen Cycling Between the Invasive Grass *Microstegium vimineum* and a Diverse Plant Community. DeMeester, J.E., and D. deB. Richter, 2010. *Ecological Applications*, 20(3), 609-619.

Go to Article

Mountain Lakes Increase Organic Matter Decomposition Rates in Streams. Goodman, K.J.,et al., 2010. *Journal of the North American Benthological Society*, 29(2), 521-529.

Go to Article

Measuring Stream Macroinvertebrate Responses to Gradients of Vegetation Cover: When is Enough Enough? Death, R.G., and K.J. Collier, 2010. *Freshwater Biology*, 55(7), 1447-1464.

Go to Article

Climatic Influences and Anthropogenic Stressors: An Integrated Framework for Streamflow Management in Mediterranean-Climate California, USA. Grantham, T.E., et al., 2010. *Freshwater Biology*, 55, 188-204.

Go to Article

Stream Acidification Increases Nitrogen Uptake by Leaf Biofilms: Implications at the Ecosystem Scale. Ely, D., et al., 2010. *Freshwater Biology*, 55(6), 1337-1348.

Go to Article

Microbial Enzyme Activity, Nutrient Uptake and Nutrient Limitation in Forested Streams. Hill, B.H., et al., 2010. *Freshwater Biology*, 55(5), 1005-1019.

Go to Article

Assessing Macroinvertebrate Metrics for Classifying Acidified Rivers Across Northern Europe. Moe, S.J., et al., 2010. *Freshwater Biology*, 55(7), 1382-1404.

Go to Article

Nitrogen and Phosphorus in the Upper Mississippi River: Transport, Processing, and Effects on the River Ecosystem. Houser, J.N., and W.B. Richardson, 2010. *Hydrobiologia*, 640(1), 71-88.

Go to Article

Microbial Atrazine Breakdown in a Karst Groundwater System and Its Effect on Ecosystem Energetics. Iker, B.C., et al., 2010. *Journal of Environmental Quality*, 39(2), 509-18.

Go to Article

Predicting Water Quality in Unmonitored Watersheds Using Artificial Neural Networks. Kalin, L., et al., 2010. *Journal of Environmental Quality*, 39(4), 1429-1440.

Go to Article

A Statistical Approach for the Rationalization of Water Quality Indicators in Surface Water Quality Monitoring Networks. Khalil, B., et al., 2010. *Journal of Hydrology*, 386(1-4), 173-185.

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Do Historical Sediments of Pulp and Paper Industry Contribute to the Exposure of Fish Caged in Receiving Waters? Oikari, A., et al., 2010. *Journal of Environmental Monitoring*, 12, 1045-1054.

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Development of Dual Fish Multi-Metric Indices of Biological Condition for Streams with Characteristic Thermal Gradients and Low Species Richness. Kanno, Y., et al., 2010. *Ecological Indicators*, 10(3), 565-571.

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Differential Effects of Elevated Nutrient and Sediment Inputs on Survival, Growth and Biomass of a Common Larval Fish Species (*Dorosoma cepedianum*). Gonzalez, M.J., et al., 2010. *Freshwater Biology*, 55(3), 654-669.

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Biotic Indices for Assessing the Status of Coastal Waters: a Review of Strengths and Weaknesses. Martínez-Crego, B., et al., 2010. *Journal of Environmental Monitoring*, 12, 1013-1028.

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Effect of Classification Procedure on the Performance of Numerically Defined Ecological Regions. Snelder, T., et al., 2010. *Environmental Management*, 45(5), 939-952.

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Defining Chlorophyll-*a* Reference Conditions in European Lakes. Poikāne, S., et al., 2010. *Environmental Management*, 45(6), 1286-1298.

Go to Article

Upcoming Meetings

Fifth National Conference on Coastal and Estuarine Habitat Restoration. November 13-17, 2010 in Galveston Island, Texas.

Go to www.estuaries.org/conference

TMDL 2010: Watershed Management to Improve Water Quality. American Society of Agricultural and Biological Engineers, November 14-17, 2010 in Baltimore, MD.

Go to www.asabe.org/meetings/tmdl2010

Water Reuse and Desalination: Water Scarcity Solutions for the 21st Century. November 15-17, 2010 in Sydney, Australia.

Go to www.watereuse.org/conferences/australia/10

Ecology and Biodiversity in Large Rivers of Northeast Asia and North America. International symposium, September 20-24, 2010 in Memphis, TN.

Go to Meeting Page or www.epa.gov/nerl

National NPS Monitoring Conference. November 16-18, 2010 in Milwaukee, WI.

Go to npsmonitoring.tetratech-ffx.com

EPA - SAB Draft Report: Office of Research and Development Strategic Research Directions and Integrated Transdisciplinary Research.

This 2010 report summarizes the outcome of meetings between ORD representatives and the SAB held on November 9-10, 2009 and April 5-6, 2010. The SAB concluded that ORD's current research and suggested strategic directions generally support ORD's key priorities.

The SAB had several recommendations. First, they recommended that ORD cultivate a systems approach in its research and provide leadership and support for transdisciplinary research teams. Because a systems approach emphasizes a holistic understanding of environmental problems, research teams need to cross disciplines. There are examples of such integrated research within ORD; the SAB suggests that this approach be implemented throughout ORD.

The SAB also recommended that ORD systematically strengthen its partnerships with states and tribes to gain their input and to develop interagency research projects. Investments in green chemistry, green engineering, and environmental justice were also encouraged. The SAB also recommends that ORD incorporate social and behavioral sciences into its work, noting that many strategies for addressing environmental problems have social and behavioral components.

Go to Report or www.epa.gov/sab

Other Products from ORD

Protecting Aquatic Life and Human Health from Chemicals and Microbes in Water

Detecting and Characterizing Engineered Nanomaterials: A Key Tool for Environmentally Responsible Nanotechnology. Heithmar, H.M., Article

Emerging Environmental Contaminants and Solid Phase Microextraction: Janusz Pawliszyn's Legacy in the Environmental Arena. Richardson, S.D., Article

Impact of Environmental Conditions (pH, Ionic Strength, and Electrolyte Type) on the Surface Charge and Aggregation of Silver Nanoparticles Suspensions. El Badawy, A.M., et al., Article

Innovative and Affordable Tools and Technologies for Sustainable Public Health Protection

Microbial Community Structure During Nitrate and Perchlorate Reduction in Ion-exchange Brine Using the Hydrogen-based Membrane Biofilm Reactor (MBfR). Van Ginkel, S., et al., 2010. Article

Ecological Systems Approach to Protect and Restore Sustainable Water Quality and Water Quantity on a Watershed Basis

Segmentation and Object-Oriented Classification of Wetlands in a Karst Florida Landscape Using Multi-Season Landsat-7 ETM+ Imagery. Charles Lane, Ph.D., USEPA ORD/NERL/EERD/ERB, lane.charles@epa.gov, 513-569-7854.

Spatial and Temporal Heterogeneity in Water Chemistry Variables Within Isolated Wetlands of Florida, USA, and Relationships with Macroinvertebrate and Diatom Communities. Charles Lane, Ph.D., USEPA ORD/NERL/EERD/ERB, lane.charles@epa.gov, 513-569-7854.

Alternative Futures Analysis of Farmington Bay Wetlands in the Great Salt Lake Ecosystem. Sumner, R., et al., 2010.EPA/600/R-10/032 Report

Lead in Lake Michigan and Green Bay Surficial Sediments. Pfeiffer, E.L., and R. Rossmann Article

EPA Small Business Innovative Research (SBIR) Grants

Go to SBIR Grants

Protecting Aquatic Life and Human Health from Chemicals and Microbes in Water

Inexpensive, Rapid and Comprehensive Virulence and Marker Gene (VMG) Analyzer for Waterborne Pathogens. AquaBioChip, LLC.

Reagentless Field-Usable Fixed-Site and Portable Analyzer for Trihalomethane (THM) Concentrations in Drinking Water. KWJ Engineering, Inc.

Rapid Concentration of Viruses from Water. Scientific Methods, Inc.

Innovative and Affordable Tools and Technologies for Sustainable Public Health Protection

Antimicrobial-Coated Granular Filter Media for Drinking Water Treatment. Coating Systems Laboratories, Inc.

Self-Healing Corrosion-Control Coatings: An Enabling Technology to Restore Aging Water Infrastructure and Permit Alternative Water Use for Cooling. NEI Corporation.

Development of a Simple, Robust, and Inexpensive Alkalinity Sensor. Technology Specialists.

Development and Commercialization of Granular Activated Carbon Microbial Fuel Cells for Wastewater Treatment and Power Generation. Fuss & O'Neill.

EPA Science to Achieve Results (STAR) Grants

Go to STAR Grants

Protecting Aquatic Life and Human Health from Chemicals and Microbes in Water

Risk-Based Decision Making for Assessing Potential Impacts of Geologic CO_2 Sequestration on Drinking-Water Sources. Colorado School of Mines, University of Wyoming.

Effects-Based Cumulative Risk Assessment in a Low-Income Urban Community near a Superfund Site. Harvard School of Public Health, Channing Laboratory.

Transport and Transformation of Natural and Synthetic Steroid Hormones at Beef Cattle and Dairy Concentrated Animal Feeding Operations (CAFOs). University of California - Berkeley, University of California - Davis, University of Nevada - Reno.

Assessing Occurrence, Persistence and Biological Effects of Hormones Released from Livestock Waste. University of Wisconsin.

Use of Biomarkers and Physiologically Based Pharmacokinetic (PBPK) Modeling in Risk Analysis for Developmental Effects of Chlorpyrifos. Clark University, Columbia University.

Bioavailability and Fates of CdSe and TiO_2 Nanoparticles in Eukaryotes and Bacteria. University of California - Santa Barbara, McGill University.

Development of a PBPK Model for Interpreting Biomonitoring Data on Carbaryl and Other N-Methyl-Carbamates. The Hamner Institutes.

Aquatic Toxicity of Carbon-Based Nanomaterials at Sediment-Water Interfaces. University of Missouri - Columbia, Columbia Environmental Research Center, USGS.

An Integrated Computational Framework for the Interpretation of Organophosphorus Pesticide Biomarkers. Colorado State University, Mississippi State University - Main Campus.

Ecotoxicology of Underivatized Fullerenes (C60) in Fish. University of Tennessee - Knoxville.

Determination of Aggregate and Cumulative Exposures of Perfluorinated Compounds Consistent with Biomarkers of the Compounds Using Simulation Modeling of Exposure and Pharmacokinetics. The LifeLine Group, Inc., Center for Human Health Assessment CIIT Centers for Health Research, University of Ottawa's Institute for Population Health.

CYP-Specific PBPK/PD Models to Interpret Biomarkers for Organophosphate Pesticides. State University of New York - Buffalo.

The Fate and Effects of Nanosized Metal Particles along a Simulated Terrestrial Food Chain Investigated Using Genomic and Microscopic Techniques. University of Georgia.

Database and Tools for Investigation of Climate-Mediated Human Disease. Washington Hospital Center.

Transport/Fate/Ecological Effects of Steroids from Poultry Litter & Evaluations of Existing/Novel Management Strategies. Wye Research and Education Center, Maryland Department of Natural Resources, School of Medicine at the University of Maryland, Virginia Institute of Marine Science.

Fate of Hormones in Waste from Concentrated Broiler Feeding Operations. University of Georgia, USDA-Agriculture Researce Service.

Innovative and Affordable Tools and Technologies for Sustainable Public Health Protection

Mapping Regional Development for Smart Growth Planning to Minimize Degradation of Water Quality and Enhance Green Infrastructure. Maine Department of Inland Fisheries and Wildlife.

Ecological Systems Approach to Protect and Restore Sustainable Water Quality and Water Quantity on a Watershed Basis

Enhancing Ecosystem Services in a High Risk Agroecosystem of the Interior Pacific Northwest in the Face of Climate Change and Land Use Intensification. Oregon State University.

Introducing the Water Research Quarterly

(continued from first page)

not do justice to the amount of quality information that could be made available to OW. We changed the format to target 2-double-sided pages for each Water program priority theme identified in April 2010 for Pete Silva (AA-Water) and Paul Anastas (AA-ORD): *Protecting Aquatic Life and Human Health from Chemicals and Microbes in Water, Innovative and Affordable Tools and Technologies for Sustainable Public Health Protection, and Ecological Systems Approach to Protect and Restore Sustainable Water Quality and Water Quantity on a Watershed Basis*. We will also include, as needed, some special "appendices," such as "Other Products from ORD," and listings of recent grants. So, some editions will be larger than others and there certainly will be some edition-to-edition adjustments. Even with the longer format, much was left on the "cutting room floor".

To optimize the content, the inaugural format that you will see in the *Quarterly* is a bold "headline or title," sometimes followed by a brief sentence introducing the findings, and then an electronic link to the complete document or more detailed information. For some works-in-progress from ORD, only a contact name may be available. We have tried to use the "words" of the original source both for the accuracy and integrity of the material. This may result in the occasional entry that gives you pause, such as "*Antidepressants in water make shrimp suicidal,*" but this was "the headline" that announced a new paper about pharmaceutical effects on aquatic biota. And it may lighten up the weight of the content! ☺

I certainly hope you will find at least one, if not many, items of interest in this and future *Quarterlies*. We are anxious for your feedback. Does the format and content work for you? Let us know.

Thanks,

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