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

From EPA

IRIS Human Health Assessments: Recent Final and Peer Review Releases. Final Assessment: Chloroprene; Cis-1,2-dichloroethylene; Pentachlorophenol; 1,1,2,2-Tetrachloroethane; Trans-1,2-dichloroethylene; Hydrogen Cyanide and Cyanide Salts. External Peer Review: Urea; Chromium VI.

Go to [www.epa.gov/IRIS](http://www.epa.gov/IRIS)

State-of-the-Science Review: Everything NanoSilver and More. 2010. EPA/600/R-10/084. Nanosilver synthesis, uses, health effects.

Go to [Report](#) or [cfpub.epa.gov/si](http://cfpub.epa.gov/si)

Characterization of Microbial Population Structures in Recreational Waters and Primary Sources of Fecal Pollution with a Next-Generation Sequencing Approach. Shanks, O.C., S. McLellan, S.M. Huse, and M.L. Sogin, 2010. Chapter 9 in K. Sen and N. J. Ashbolt (ed.), Environmental Microbiology: Current Technology and Water Applications.

Go to [www.horizonpress.com/water-microbiology](http://www.horizonpress.com/water-microbiology)

The Adsorption of Arsenic on Iron Pipes in Water Distribution Systems. Schroeder, M. and D.A. Lytle, 2010. Presented at EPA Workshop. Type of lead that forms in a pipe affected by pH and organic carbon content of water.

Go to [Report](#) or [cfpub.epa.gov/si](http://cfpub.epa.gov/si)

Application of a Multiroute Human PBPK Model for Bromodichloromethane (BDCM). Kenyon, E.M., et al. Dermal and inhalation exposure compared with oral exposure. Results suggest large contribution of inhalation, dermal exposure.

William Russo, USEPA ORD/NHEERL, [russo.bill@epa.gov](mailto:russo.bill@epa.gov), 919-541-7869 or [www.epa.gov/nheerl](http://www.epa.gov/nheerl)

Standard Analytical Protocol for Escherichia coli O157:H7 in Water.

Go to [Report](#) or [www.epa.gov/nhsrc](http://www.epa.gov/nhsrc)

Bayer Agrees to Terminate All Uses of Aldicarb. Production end 2014, remaining uses end 2018.

Go to [Article](#) or [www.epa.gov/pesticides](http://www.epa.gov/pesticides)

From Collaborators

Gulf Oil Spill - NSF Funds Research on Impacts to Florida Everglades. Awarded to study effects on seagrasses and mangrove forests.

Go to [Article](#) or [www.nsf.gov](http://www.nsf.gov)

NAS-NRC - Review of the Federal Response to the Health Effects Associated with the Gulf of Mexico Oil Spill.

Go to [Article](#) or [www.iom.edu](http://www.iom.edu)

**NSF Awards Grant to Study Effects of Oil and Dispersants on Louisiana Salt Marsh Ecosystem.**

Go to [Article](#) or [www.nsf.gov](http://www.nsf.gov)

**CDC - Released Health Effects Data of Lead Exposure from Municipal Water Systems.** Data shows no level of lead exposure considered safe, especially for children.

Go to [Article](#) or [www.cdc.gov](http://www.cdc.gov)

**ATSDR Releases Health Advisory to Prevent Hexavalent Chromium Exposure in Garfield, NJ.** Recommends staying out of basements.

Go to [Article](#) or [www.atsdr.cdc.gov](http://www.atsdr.cdc.gov)

**Ohio River Study Finds Drugs, Chemicals That Slip Through Waste Treatment.** Chemicals and pharmaceuticals (antidepressants, veterinary hormones, cocaine) detected.

Go to [Article](#) or [www.courier-journal.com](http://www.courier-journal.com)

**Identifying Hormonally Active Compounds, Pharmaceuticals, and Personal Care Product Ingredients of Health Concern.** Health risk-based guidelines for emerging contaminants select the level most protective of human health.

Go to [Report](#) or [www.watereuse.org](http://www.watereuse.org)

**USGS - Elevated Nutrients in the Nation's Streams and Groundwater—A Continuing Issue.** Concentrations, key sources, potential effects on humans and aquatic life, and changes since the early 1990s.

Go to [Report](#) or [www.usgs.gov](http://www.usgs.gov)

**USGS - Cyanotoxin Mixtures and Taste-and-Odor Compounds in Cyanobacterial Blooms from the Midwestern United States.** Graham, J.L., et al., 2010. *Environmental Science & Technology*, 44(19), 7361-7368.

Go to [Article](#) or [www.usgs.gov](http://www.usgs.gov)

**Impact of Chloride to Sulfate Mass Ratio (CSMR): Changes on Lead Leaching in Potable Water.** WRF Project # 4088. Effects of coagulant changeover on lead release from plumbing.

Go to [Report](#) or [www.waterrf.org](http://www.waterrf.org)

**USGS Releases Study of Pharmaceuticals in Wastewater.** Loads have been underestimated.

Go to [Article](#) or [www.awwa.org](http://www.awwa.org)

**USGS - Many Urban Streams Harmful to Aquatic Life Following Winter Pavement Deicing.**

Go to [Article](#) or [www.usgs.gov](http://www.usgs.gov)

**USFWS - Grassy Island Containment Evaluation is Underway.** This diked disposal location evaluated to determine effectiveness of containment measures.

Go to [Article](#) or [www.fws.gov](http://www.fws.gov)

**Workshop Summary: Antibiotic Resistance: Implications for Global Health and Novel Intervention Strategies.** Lessening the impact of these superbugs.

Go to [Report](#) or [www.iom.edu](http://www.iom.edu)

**Marine Scientists and Students Find Widespread Floating Plastic Debris in North Atlantic Ocean.** Examined data collected for over 22 years.

Go to [Article](#) or [www.nsf.gov](http://www.nsf.gov)

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## *From the Journals*

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**Role of Detection Limits in Drinking Water Regulation.** Calder, R.S.D. and K.A. Schmitt, 2010. *Environmental Science & Technology*, 44(21), 8008-8014.

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**Nitrate May Feed Thyroid Disorders.** Weinhold, B., 2010. *Environmental Health Perspectives*, 118(6), A242-A242. Women whose water contained >2.46 mg/L were 2.18 times more likely to have thyroid cancer than those whose water contained <0.36 mg/L.

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**Investigation of Relationships between Urinary Biomarkers of Phytoestrogens, Phthalates, and Phenols and Pubertal Stages in Girls.** Wolff, M.S., et al., 2010. *Environmental Health Perspectives*, 118(7), 1039-1046.

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**Relationship between Environmental Phthalate Exposure and the Intelligence of School-Age Children.** Cho, S., et al., 2010. *Environmental Health Perspectives*, 118(7), 1027-1032.

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**Dietary Intake Associated with Phthalate Body Burden in a Nationally Representative Sample.** Colacino, J.A., et al., 2010. *Environmental Health Perspectives*, 118(7), 998-1003.

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**Low Dose of Some Persistent Organic Pollutants Predicts Type 2 Diabetes: A Nested Case–Control Study.** Lee, D.H., et al., 2010. *Environmental Health Perspectives*, 118(9), 1235-1242.

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**Urinary, Circulating, and Tissue Biomonitoring Studies Indicate Widespread Exposure to Bisphenol A.** Vandenberg, L.N., et al., 2010. *Environmental Health Perspectives*, 118(8), 1055-1070.

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**Epidemiologic Evidence on the Health Effects of Perfluorooctanoic Acid (PFOA).** Steenland, K., et al., 2010. *Environmental Health Perspectives*, 118(8), 1100-1108.

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**Probabilistic Risk Evaluation for Triclosan in Surface Water, Sediments, and Aquatic Biota Tissues.** Lyndall, J., et al., 2010. *Integrated Environmental Assessment and Management*, 6(3), 419-440.

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**No Association between Arsenic Exposure from Drinking Water and Diabetes Mellitus: A Cross-Sectional Study in Bangladesh.** Chen, Y., et al., 2010. *Environmental Health Perspectives*, 118(9), 1299-1305.

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**Behavior of Trace Inorganic Contaminants in Drinking Water Distribution Systems.** Hill, A.S., et al., 2010. *Journal American Water Works Association*, 102(7), 107.

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**Summing Nondetects: Incorporating Low-Level Contaminants in Risk Assessment.** Helsel, D.R., 2010. *Integrated Environmental Assessment and Management*, 6(3), 361-366.

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**Use of Bioassays and Sediment Polycyclic Aromatic Hydrocarbon Concentrations to Assess Toxicity at Coastal Sites Impacted by Hurricane Katrina.** Weston, J., et al., 2010. *Environmental Toxicology and Chemistry*, 29(7), 1409-1418.

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**Arsenic Exposure from Drinking Water, and All-Cause and Chronic-Disease Mortalities in Bangladesh (HEALS): A Prospective Cohort Study.** Argos M., et al., 2010. *The Lancet*, 376(9737), 252-258.

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**Bioaccumulation of the Pharmaceutical 17  $\alpha$ -Ethinylestradiol in Shorthead Redhorse Suckers (*Moxostoma macrolepidotum*) from the St. Clair River, Canada.** Al-Ansari, A.M., et al., 2010. *Environmental Pollution*, 158(8), 2566-2571.

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**Impacts of Early Life Exposure to Estrogen on Subsequent Breeding Behavior and Reproductive Success in Zebrafish.** Coe, T.S., et al., 2010. *Environmental Science & Technology*, 44(16), 6481-6487.

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**Estrogenic and Anti-Estrogenic Effects of Wood Extractives Present in Pulp and Paper Mill Effluents on Rainbow Trout.** Orrego, R., et al., 2010. *Aquatic Toxicology*, 99(2), 160-167.

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**Specific In Vitro Toxicity of Crude and Refined Petroleum Products: II. Estrogen ( $\alpha$  and  $\beta$ ) and Androgen Receptor-Mediated Responses in Yeast Assays.** Vrabie, C.M., et al., 2010. *Environmental Toxicology and Chemistry*, 29(7), 1529-1536.

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**Computational Toxicology: Realizing the Promise of Toxicity Testing in the 21st Century.** Rusyn, I. and G.P. Daston, 2010. *Environmental Health Perspectives*, 118(8), 1047-1050.

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**A Review of Pesticide Exposure and Cancer Incidence in the Agricultural Health Study Cohort.** Weichenthal, S., et al., 2010. *Environmental Health Perspectives*, 118(8), 1117-1125.

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**Influence of Stability on the Acute Toxicity of CdSe/ZnS Nanocrystals to *Daphnia magna*.** Pace, H.E., et al., 2010. *Environmental Toxicology and Chemistry*, 29(6), 1338-1344.

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**Nutrients and Metals Effects on Nitrification in Drinking Water Systems.** Zhang, Y. and M. Edwards, 2010. *Journal American Water Works Association*, 102(7), 56.

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**Meeting Report: Pharmaceuticals in Water—An Interdisciplinary Approach to a Public Health Challenge.** Rodriguez-Mozaz, S. and H.S. Weinberg, 2010. *Environmental Health Perspectives*, 118(7), 1016-1020.

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**Probabilistic Modeling of Dietary Arsenic Exposure.** Boyce, C.P., et al., 2010. *Environmental Health Perspectives*, 118(8), A331-A332.

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**Mechanistic Toxicity Assessment of Nanomaterials by Whole-Cell-Array Stress Genes Expression Analysis.** Gou, N., et al., 2010. *Environmental Science & Technology*, 44(15), 5964-5970.

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**Susceptibility of Human Populations to Environmental Exposure to Organic Contaminants.** Undeman, E., et al., 2010. *Environmental Science & Technology*, 44(16), 6249-6255.

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**Adverse Effects of Methyl-Mercury: Environmental Health Research Implications.** Grandjean, P., et al., 2010. *Environmental Health Perspectives*, 118(8), 1137-1145.

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**Environmental Occurrence and Reproductive Effects of the Pharmaceutical Fluoxetine in Native Freshwater Mussels.** Bringolf, R.B., et al., 2010. *Environmental Toxicology and Chemistry*, 29(6), 1311-1318.

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**Triclosan Has Endocrine-Disrupting Effects in Male Western Mosquitofish, *Gambusia affinis*.** Raut, S.A. and R.A. Angus, 2010. *Environmental Toxicology and Chemistry*, 29(6), 1287-1291.

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**Biomonitoring Studies Should Be Used by Regulatory Agencies to Assess Human Exposure Levels and Safety of Bisphenol A.** Vandenberg, L.N., et al., 2010. *Environmental Health Perspectives*, 118(8), 1051-1054.

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**Fecundability and Serum PBDE Concentrations in Women.** Goodman, J.E., et al., 2010. *Environmental Health Perspectives*, 118(8), A330-A330.

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**PBDE Concentrations in Women: Harley et al. Respond.** Harley, K.G., et al., 2010. *Environmental Health Perspectives*, 118(8), A330-A331.

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**Atrazine Reduces Reproduction in Fathead Minnow (*Pimephales promelas*).** Tillitt, D.E., et al., 2010. *Aquatic Toxicology*, 99(2), 149-159.

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**Reproductive Responses in Fathead Minnow and Japanese Medaka Following Exposure to a Synthetic Progestin, Norethindrone.** Paulos, P., et al., 2010. *Aquatic Toxicology*, 99(2), 256-262.

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**A Role for Analytical Chemistry in Advancing Our Understanding of the Occurrence, Fate, and Effects of Corexit Oil Dispersants.** Place, B., et al., 2010. *Environmental Science & Technology*, 44(16), 6016-6018.

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**Tissue-Specific Distribution and Whole-Body Burden Estimates of Persistent Organic Pollutants in the Bottlenose Dolphin (*Tursiops truncatus*).** Yordy, J.E., et al., 2010. *Environmental Toxicology and Chemistry*, 29(6), 1263-1273.

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**Can the Biotic Ligand Model Predict Cu Toxicity Across a Range of pHs in Softwater-Acclimated Rainbow Trout?** Ng, T.Y.T., et al., 2010. *Environmental Science & Technology*, 44(16), 6263-6268.

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**Mercury Contamination of the Fish Community of a Semi-Arid and Arid River System: Spatial Variation and the Influence of Environmental Gradients.** Smith, A., et al., 2010. *Environmental Toxicology and Chemistry*, 29(8), 1762-1772.

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**Three Common Metal Contaminants of Urban Runoff (Zn, Cu & Pb) Accumulate in Freshwater Biofilm and Modify Embedded Bacterial Communities.** Ancion, P.Y., et al., 2010. *Environmental Pollution*, 158(8), 2738-2745.

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**Multi-Generational Effects of Polybrominated Diphenylethers Exposure: Embryonic Exposure of Male American Kestrels (*Falco sparverius*) to DE-71 Alters Reproductive Success and Behaviors.** Marteinson, S.C., et al., 2010. *Environmental Toxicology and Chemistry*, 29(8), 1740-1747.

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**Estrogen Responses in Killifish (*Fundulus heteroclitus*) from Polluted and Unpolluted Environments Are Site- and Gene-Specific.** Greytak, S.R., et al., 2010. *Aquatic Toxicology*, 99(2), 291-299.

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**Fate and Effects of Composition B in Multispecies Marine Exposures.** Rosen, G. and G.R. Lotufo, 2010. *Environmental Toxicology and Chemistry*, 29(6), 1330-1337.

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**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 & Technology*, 44(15), 5979-5985.

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**Toxicity of Three Binary Mixtures to *Daphnia magna*: Comparing Chemical Modes of Action and Deviations from Conceptual Models.** Loureiro, S., et al., 2010. *Environmental Toxicology and Chemistry*, 29(8), 1716-1726.

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**A Physiologically Based Toxicokinetic Model for Methylmercury in Female American Kestrels.** Nichols, J.W., et al., 2010. *Environmental Toxicology and Chemistry*, 29(8), 1854-1867.

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**Do Fish Growth Rates Correlate with PCB Body Burdens?** Rypel, A.L. and D.R. Bayne, 2010. *Environmental Pollution*, 158(8), 2533-2536.

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## Upcoming Meetings

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**Disinfection 2011.** April 10-12, 2011 in Cincinnati, OH.

Go to [www.wef.org/disinfection](http://www.wef.org/disinfection)

**Residuals and Biosolids 2011 - Adapting Residuals Management to a Changing Climate.** May 22-25, 2011 in Sacramento, CA.

Go to [www.wef.org/ResidualsBiosolids](http://www.wef.org/ResidualsBiosolids)

## Innovative and Affordable Tools and Technologies for Sustainable Public Health Protection

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### *From EPA*

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**Arsenic Removal from Drinking Water by Iron Removal and Coagulation/Filtration at Two EPA Demonstration Sites: Sabin, MN and Felton, DE.** 2010. EPA/600/R-10/033 and EPA/600/R-10/039.

Go to [Report 1](#), [Report 2](#), or [www.epa.gov/nrmrl/pubs](http://www.epa.gov/nrmrl/pubs)

**Treating Contaminants of Emerging Concern: A Literature Review.** Searchable database for technologies and their removal capabilities.

Go to [Report](#) or [water.epa.gov/scitech](http://water.epa.gov/scitech)

**Condition Assessment of Wastewater Collection Systems.** Tuccillo, M.E., et al., 2010. EPA/600/R-10/101. Innovative and emerging technologies for sanitary sewer assessment (includes performance data and cost information).

Go to [Report](#) or [www.epa.gov/nrmrl](http://www.epa.gov/nrmrl)

**State of Technology for Rehabilitation of Wastewater Collection Systems.** Sterling, R., J. Simicevic, E. Allouche, W. Condit, and L. Wang, 2010. EPA/600/R-10/078.

Go to [Report](#) or [www.epa.gov/nrmrl/pubs](http://www.epa.gov/nrmrl/pubs)

**Development, and Ground-Truthing, of Analytical Tools for Measuring Select Emerging Contaminants (ECs) in a Sub-Set of Biosolids Collected During OW's 2006-2007 National Biosolids Survey Project.** EPA/600/R-10/108.

Tammy L Jones-Lepp, USEPA ORD/NERL/ESD, [jones-lepp.tammy@epa.gov](mailto:jones-lepp.tammy@epa.gov), 702-798-2144.

**EPA Releases the Tabletop Exercise Tool for Water Systems: Emergency Preparedness, Response, and Climate Resiliency.** Introduction to potential impacts of climate change on water within context of an all-hazards approach to emergency preparedness and response.

Go to [Report](#) or [water.epa.gov/infrastructure](http://water.epa.gov/infrastructure)

**Field Screening Equipment Information Document: Companion to Standardized Analytical Methods for Environmental Restoration Following Homeland Security Events.**

Go to [Report](#) or [www.epa.gov/nhsrc/pubs.html](http://www.epa.gov/nhsrc/pubs.html)

**Nutrient Control Design Manual.** Hertzler, P., et al., 2010. EPA/600/R-10/100. Principles of biological nutrient removal, emerging issues in wastewater industry.

Go to [Report](#) or [www.epa.gov/nrmrl/pubs](http://www.epa.gov/nrmrl/pubs)

**Microbial Source Tracking: Current and Future Molecular Tools in Microbial Water Quality Forensics.** Santo-Domingo, J.W., R. Lamendella, and N. Ashbolt, 2010. Chapter 10 in K. Sen and N. Ashbolt (eds.), *Environmental Microbiology: Current Technology and Water Applications*.

Go to [www.horizonpress.com/water-microbiology](http://www.horizonpress.com/water-microbiology)

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### *From Collaborators*

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**Development and Testing of "Smart" Nanofiltration Membranes.** Guillen, G.R. and E.M.V. Hoek, 2010. National Water Research Institute. Conducting polymer membranes tested for selectively controlling particle transport using electrical fields.

Go to [Report](#) or [nwri-usa.org](http://nwri-usa.org)

**Removal and Fate of EDCs and Pharmaceuticals in Bank Filtration Systems.** WRF Project #3136. Riverbank filtration effective in removing PPCPs, EDCs, and industrial chemicals.

Go to [Report](#) or [www.waterrf.org](http://www.waterrf.org)

**Biological Destruction of Perchlorate and Nitrate in Ion Exchange Concentrate.** Addresses issues of biomass recovery, recycle, and scale-up.

Go to [Report](#) or [www.wef.org](http://www.wef.org)

## **Contaminant Candidate List Viruses: Evaluation of Disinfection Efficacy.**

Go to [Report](#) or [www.waterrf.org](http://www.waterrf.org)

## **Low-Cost Treatment Technologies for Small-Scale Water Reclamation Plants.** For systems with flows of less than 1 mgd.

Go to [Article](#) or [www.watereuse.org](http://www.watereuse.org)

## **Treating Algal Toxins Using Oxidation, Adsorption, and Membrane Technologies.** WRF Project # 2839. Implementation and cost data.

Go to [Report](#) or [www.waterrf.org](http://www.waterrf.org)

## **Impacts of Lining Material on Water Quality.**

Lining materials used in distribution systems that may release compounds with potential health effects into drinking water.

Go to [Report](#) or [www.wef.org](http://www.wef.org)

## **Monitoring for Microconstituents in an Advanced Wastewater Treatment Facility and Modeling Discharge of Reclaimed Water to Surface Canals for Indirect Potable Use.**

Go to [Report](#) or [www.desalination.biz](http://www.desalination.biz)

## **Water Conservation: Customer Behavior and Effective Communications.** WRF Project # 4012. Measured the effectiveness of conservation communications campaigns.

Go to [Report](#) or [www.waterrf.org/thefoundation](http://www.waterrf.org/thefoundation)

## **Decision Tool Helps Utilities Select Treatment Options.** WRF Project #3115. Simultaneous Compliance Tool, online and updated with more information for small systems.

Go to [Report](#) or [www.waterrf.org](http://www.waterrf.org)

## **DOE - Awards \$37 Million for Marine and Hydrokinetic Energy Technology Development.** Ranging from concept studies to prototype testing to generate renewable energy from oceans and rivers.

Go to [Article](#) or [www.energy.gov](http://www.energy.gov)

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## *From the Journals*

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### **Full-Scale Assessment of the Nutrient Removal Capabilities of Membrane Bioreactors.** Daigger, G., et al., 2010. *Water Environment Research*, 82(9), 806-818.

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### **Impact of Nanoparticles and Natural Organic Matter on the Removal of Organic Pollutants by Activated Carbon Adsorption.** Jasper, A., et al., 2010. *Environmental Engineering Science*, 27(1), 85-93.

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### **Performance Evaluation of a Constructed Wetland Treating High-Ammonium Primary Domestic Wastewater Effluent.** Spokas, L.A., et al., 2010. *Water Environment Research*, 82(7), 592-600.

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### **Enhanced Degradation of Chlorobenzene in Aqueous Solution Using Microwave-Induced Zero-Valent Iron and Copper Particles.** Lee, C., et al., 2010. *Water Environment Research*, 82(7), 642-647.

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### **Identification of Bacterial Populations in Drinking Water using 16S rRNA-Based Sequence Analyses.** Revetta, R.P., et al., 2010. *Water Research*, 44(5), 1353-1360.

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### **A Laboratory Screening Study on the Use of Solidifiers as a Response Tool to Remove Crude Oil Slicks on Seawater.** Rosales, P.I., M.T. Suidan, and A.D. Venosa, 2010. *Chemosphere*, 80(4), 389-395.

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### **Evaluating a Composite Cartridge for Small System Drinking Water Treatment.** Muhammad, N., et al., 2010. *Water Health*, 8(2), 212-23. Incorporates physical filtration, carbon adsorption, and UV light disinfection for a home-based treatment system.

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**Long-Term Effectiveness and Consequences of Carbon Dioxide Sequestration.** Shaffer, G., 2010. *Nature Geoscience*, 3, 464-467.

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**The Capture and Destruction of *Escherichia coli* from Simulated Urban Runoff Using Conventional Bioretention Media and Iron Oxide-coated Sand.** Zhang, L., et al., 2010. *Water Environment Research*, 82(8), 701-714.

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**Study on the Treatment of Wastewater Containing Mercury by Macromolecular Heavy Metal Flocculant Mercaptoacetyl Polyethyleneimine.** Min, X., et al., 2010. *Water Environment Research*, 82(9)790-796.

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**A Comprehensive Investigation of Copper Pitting Corrosion in a Drinking Water Distribution System.** Lytle, D.A. and M. Nadagouda, 2010. *Corrosion Science*, 52(6), 1927-1938.

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**Performance of PCR-Based Assays Targeting Bacteroidales Genetic Markers of Human Fecal Pollution in Sewage and Fecal Samples.** Shanks, O.C., et al., 2010. *Environmental Science & Technology*, 44(16), 6281-6288.

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**Condition Assessment Modeling for Distribution Systems Using Shared Frailty Analysis.** Clark, R.M., et al., 2010. *Journal American Water Works Association*, 102(7), 81-91.

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**Transformation of  $\beta$ -Lactam Antibacterial Agents during Aqueous Ozonation: Reaction Pathways and Quantitative Bioassay of Biologically-Active Oxidation Products.** Dodd, M.C., et al., 2010. *Environmental Science & Technology*, 44(15), 5940-5948.

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**Oxidation Kinetics of Antibiotics during Water Treatment with Potassium Permanganate.** Hu, L.H., et al., 2010. *Environmental Science & Technology*, 44(16), 6416-6422.

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**Effects of Source Water Quality on Chlorine Inactivation of Adenovirus, Coxsackievirus, Echovirus, and Murine Norovirus.** Kahler, A.M., et al., 2010. *Applied and Environmental Microbiology*, 76(15), 5159-5164.

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**Global Spatial Indexing of the Human Impact on Al, Cu, Fe, and Zn Mobilization.** Rauch, J.N., 2010. *Environmental Science & Technology*, 44(15), 5728-5734.

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**Uptake of Pharmaceutical and Personal Care Products by Soybean Plants from Soils Applied with Biosolids and Irrigated with Contaminated Water.** Wu, C.X., et al., 2010. *Environmental Science & Technology*, 44(16), 6157-6161.

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**Sampling for PPCPs in Wastewater Systems: Comparison of Different Sampling Modes and Optimization Strategies.** Ort, C., et al., 2010. *Environmental Science & Technology*, 44(16), 6289-6296.

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**Disinfection and Solubilization of Sewage Sludge Using the Microwave Enhanced Advanced Oxidation Process.** Yu, Y., et al., 2010. *Journal of Hazardous Materials*, 181(1-3), 1143-1147.

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**Model Stream Channel Testing of a UV-Transparent Polymer-Based Passive Sampler For Ultra-Low-Cost Water Screening Applications.** Kibbey, T.C., L. Chen, D.A. Sabatini, M.A. Mills, and C. Nietch, 2010. *Chemosphere*, 80(8), 908-913.

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## *Upcoming Meetings*

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**The Utility Management Conference 2011.**

February 8-11, 2011 in Denver, CO.

Go to [www.wef.org/utilitymanagement](http://www.wef.org/utilitymanagement)

**Ground Water Summit and Ground Water Protection Council Spring Meeting.** May 1-5, 2011 in Baltimore, MD.

Go to [www.ngwa.org/summit2011](http://www.ngwa.org/summit2011)

**Managed Aquifer Recharge Symposium.** January 25-26, 2011 in Irvine, CA.

Go to [Meeting Page](#) or [www.nwri-usa.org](http://www.nwri-usa.org)

**26th Annual WaterReuse Symposium.** September 11-14, 2011 in Phoenix, AZ. Abstracts due January 24, 2011.

Go to [Meeting Page](#) or [www.watereuse.org](http://www.watereuse.org)

**8th Annual CitiesAlive Green Roof and Wall Conference.** November 30-December 3, 2010 in Vancouver, BC, Canada.

Go to [www.citiesalive.org](http://www.citiesalive.org)

**National Green Infrastructure Conference 2011.**

February 23-25, 2011 in Shepherdstown, WV.

Go to [www.conservationfund.org/GIC2011](http://www.conservationfund.org/GIC2011)

**2011 WaterReuse California Annual Conference.**

March 20-22, 2011 in Dana Point, CA.

Go to [Meeting Page](#) or [www.watereuse.org](http://www.watereuse.org)

**15th Annual Water Reuse and Desalination Research Conference.** May 16-17, 2011 in Las Vegas, NV.

Go to [Meeting Page](#) or [www.watereuse.org](http://www.watereuse.org)

**Watermatex 2011: IWA Symposium on Systems Analysis and Integrated Assessment.** June 20-22, 2011 in San Sebastian, Spain.

Go to [www.watermatex2011.org](http://www.watermatex2011.org)

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

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### *From EPA*

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**Climate Change Vulnerability Assessments: Four Case Studies of Water Utility Practices Draft Report.**

Go to [Report](#) or [www.epa.gov/climatechange](http://www.epa.gov/climatechange)

**Draft Report: A Method to Assess Climate Relevant Decisions: Application in the Chesapeake Bay.**

Go to [Report](#) or [www.epa.gov/ncea](http://www.epa.gov/ncea)

**Coral Reef Biological Criteria: Using the Clean Water Act to Protect a National Treasure.** Bradley, P., et al., 2010. EPA/600/R-10/054. Framework for developing coral reef biocriteria as water quality standards.

Go to [Report](#) or [www.epa.gov/bioindicators](http://www.epa.gov/bioindicators)

**EPA Great Lakes Restoration Initiative Grants Awarded Totaling \$20 Million in New York State.** Grants to 17 organizations.

Go to [Article](#) or [www.epa.gov/ocsp](http://www.epa.gov/ocsp)

**Coming Together for Clean Water: EPA's Strategy for Achieving Clean Water.** Draft strategy to protect and restore our nation's lakes, streams, and coastal waters.

Go to [Report](#) or [blog.epa.gov/waterforum](http://blog.epa.gov/waterforum)

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### *From Collaborators*

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**NSF Scientists Map Large Underwater Hydrocarbon Plume in Gulf from Oil Spill.** Detected plume at least 22 miles-long, 1.2 miles-wide, 650-foot-high, and 3,000 feet below the surface.

Go to [Article](#) or [www.nsf.gov](http://www.nsf.gov)

**USFWS Addresses Urgent Habitat Needs for Birds and Other Wildlife along the Gulf Coast.** Working with partners on habitat conservation after gulf oil spill.

Go to [Article](#) or [www.fws.gov](http://www.fws.gov)

**NAS-NRC - Progress Towards Restoring the Everglades: The Third Biennial Review.** Explores challenges of water quantity and quality in Everglades.

Go to [Report](#) or [www.nap.edu](http://www.nap.edu)

**USGS - Ten-fold Increase in Native Submerged Vegetation Reflects Improved Water Quality in Potomac River.**

Go to [Article](#) or [www.usgs.gov](http://www.usgs.gov)

**USGS - A New Understanding of 31 Years of Chesapeake Bay Nutrient Trends.** Method for tracking progress of reducing nutrients from watershed.

Go to [Article](#) or [www.usgs.gov](http://www.usgs.gov)

**Watershed Pathogen Modeling for Risk Management and Load Estimations.** Modeling land use, slope, soil type, rainfall, and vegetation status.

Go to [Report](#) or [www.waterrf.org](http://www.waterrf.org)

**USFWS Releases Final Climate Strategy.** Response to threat of global warming.

Go to [Article](#) or [www.fws.gov](http://www.fws.gov)

**Advanced Nearshore Circulation and Sediment Transport Modeling.** A quasi-2D (cross-shore and vertical) model includes nearshore waves and currents with sediment transport. Verified using data from the Large-scale Sediment Transport Facility.

Go to [Report](#) or [chl.erdc.usace.army.mil](http://chl.erdc.usace.army.mil)

**Comparison of Three Biomass Sampling Techniques on Submersed Aquatic Plants in a Northern Tier Lake.**

Go to [Report](#) or [el.erdc.usace.army.mil](http://el.erdc.usace.army.mil)

**NAS-NRC - Ocean Acidification: A National Strategy to Meet the Challenges of a Changing Ocean.**

Go to [Report](#) or [books.nap.edu](http://books.nap.edu)

# Water Research Quarterly

**Effects of Nutrients, Salinity, and pH on *Salvinia molesta* (Mitchell) Growth.** Giant salvinia has invaded several southern, freshwater systems and formed floating mats up to 1 m thick. Temperature, nutrients, salinity, and pH may limit distribution and survival.

Go to [Report](#) or [el.erdc.usace.army.mil](http://el.erdc.usace.army.mil)

**USACE - A New Nonmonetary Metric for Indicating Environmental Benefits from Ecosystem Restoration Projects.** The Biodiversity Security Index measures value gained from securing native species from decline by providing natural ecosystem support.

Go to [Report](#) or [el.erdc.usace.army.mil](http://el.erdc.usace.army.mil)

**Implementing Rapid Bioassessment Protocols for Watershed Monitoring.** Allows standard evaluation, characterization, and monitoring of stream quality.

Go to [Report](#) or [el.erdc.usace.army.mil](http://el.erdc.usace.army.mil)

**NSF - Slowing Urban Sprawl and Adding Forests; Best Approach to Curb Floods and Help Rivers.** Purdue University.

Go to [Article](#) or [www.nsf.gov](http://www.nsf.gov)

**NRDC - Climate Change, Water, and Risk: Current Water Demands Are Not Sustainable.** One-third of all counties face higher risks of shortages by mid-century; more than 400 facing extremely high risks.

Go to [Report](#) or [www.nrdc.org/globalwarming](http://www.nrdc.org/globalwarming)

**Scientific Assessment of Hypoxia in U.S. Coastal Waters.** Interagency Working Group on Harmful Algal Blooms, Hypoxia, and Human Health. Outlines steps that may help reverse this decades-long trend.

Go to [Report](#) or [www.whitehouse.gov](http://www.whitehouse.gov)

**NSF - Tile Drainage Directly Related to Nitrate Loss.** Heavily tile-drained areas are found to be largest source of nitrate in the Gulf of Mexico.

Go to [Article](#) or [www.nsf.gov](http://www.nsf.gov)

**USFWS - Service Awards More Than \$4.7 Million for Fish and Wildlife Restoration in the Great Lakes Basin.**

Go to [Article](#) or [www.fws.gov](http://www.fws.gov)

**Stormwater Model to Inform Regulators on Future Development Projects.** North Carolina State University.

Go to [Article](#) or [www.bae.ncsu.edu](http://www.bae.ncsu.edu)

**NSF - Insecticides From Genetically Modified Corn Present in Adjacent Midwest Streams.**

Go to [Article](#) or [www.nsf.gov](http://www.nsf.gov)

**Warming Ocean Temperatures Causing Massive Coral Bleaching in South Asia.** About 80% of coral species in the Aceh province of Indonesia have died since May; ocean temperatures 4°C above average.

Go to [Article](#) or [www.eesi.org](http://www.eesi.org)

**NOAA - State of the Coasts Website.** Source for quick facts and detailed statistics. Highlights importance of a healthy coastal ecosystem to the economy, safety, and sustainable quality of life for coastal residents.

Go to [stateofthecoast.noaa.gov](http://stateofthecoast.noaa.gov)

**Initial Application of a Landscape Evolution Model to a Louisiana Wetland.** Feasibility of transferring a model developed for the Florida Everglades to Davis Pond, LA.

Go to [Report](#) or [el.erdc.usace.army.mil](http://el.erdc.usace.army.mil)

**Aluminum Sulfate Application to Improve Under-Water Light Condition for Native Submersed Macrophyte Restoration: Alum to Phosphorus Binding Ratio Considerations.**

Go to [Report](#) or [el.erdc.usace.army.mil](http://el.erdc.usace.army.mil)

**WERF - Sustainable Water Resources Management Volume 3: Case Studies on New Water Paradigm.**

Go to [Report](#) or [www.werf.org](http://www.werf.org)

**NOAA - Second Warmest July and Warmest Year-to-Date Global Temperature on Record.**

Go to [Article](#) or [www.noaa.gov](http://www.noaa.gov)

**Final Report on Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem.**

Go to [Report](#) or [www.waterboards.ca.gov/waterrights](http://www.waterboards.ca.gov/waterrights)

**Exchangeable Phosphorus Pools and Equilibrium Characteristics for River Sediment as a Function of Particle Size.** For use in SWWRP-NSM parameters to simulate adsorption and desorption in river systems.

Go to [Report](#) or [el.erdc.usace.army.mil](http://el.erdc.usace.army.mil)

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## From the Journals

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**A Weight-of-Evidence Approach to Define Nutrient Criteria Protective of Aquatic Life in Large Rivers.** Smith, A.J. and C.P. Tran, 2010. *Journal of the North American Benthological Society*, 29(3), 875-891.

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**Does Encouraging the Use of Wetlands In Water Quality Trading Programs Make Economic Sense?** Heberling, M.T., J.H. Garcia, and H.W. Thurston, 2010. *Ecological Economics*, 69(10), 1988-1994.

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**Combining Rapid Bioassessment and Field-Based Microcosms for Identifying Impacts in an Urban River.** O'Brien, M.L., et al., 2010. *Environmental Toxicology and Chemistry*, 29(8), 1773-1780.

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**Sediment Quality in Near Coastal Waters of the Gulf Of Mexico: Influence of Hurricane Katrina.** Macauley, J.M., et al., 2010. *Environmental Toxicology and Chemistry*, 29(7), 1403-1408.

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**Role of Stream Restoration on Improving Benthic Macroinvertebrates and In-Stream Water Quality in an Urban Watershed: Case Study.** Selvakumar, A., T. O'Connor, and S. Struck, 2010. *Journal of Environmental Engineering*, 136(1), 127-139.

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**Sources of Suspended-Sediment Flux in Streams of the Chesapeake Bay Watershed: A Regional Application of the Sparrow Model.** Brakebill, J.W., et al., 2010. *Journal of the American Water Resources Association*, 46(4), 757-776.

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**A Method to Identify Estuarine Macroinvertebrate Pollution Indicator Species in the Virginian Biogeographic Province.** Pelletier, M.C., et al., 2010. *Ecological Indicators*, 10(5), 1037-1048.

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**Bacteria Dispersal by Hitchhiking on Zooplankton.** Grossarta, H.P., et al., 2010. *Proceedings of the National Academy of Sciences*, 107(26), 11959-11964.

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**Sources of Nitrite in Streams of an Intensively Cropped Watershed.** Corriveau, J., et al., 2010. *Water Environment Research*, 82(7), 622-632.

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**Use of Ecological Thresholds to Assess Recovery in Lotic Ecosystems.** Clements, W.H., et al., 2010. *Journal of the North American Benthological Society*, 29(3), 1017-1023.

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**The Relative Influence of Nutrients and Habitat on Stream Metabolism in Agricultural Streams.** Frankforter, J.D., et al., 2010. *Environmental Monitoring and Assessment*, 168(1-4), 461-479.

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**Applying Thresholds to Forecast Potential Biodiversity Loss from Human Development.** Hilderbrand, R.H., et al., 2010. *Journal of the North American Benthological Society*, 29(3), 1009-1016.

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**Gulf of Mexico Hypoxia: Exploring Increasing Sensitivity to Nitrogen Loads.** Liu, Y., et al., 2010. *Environmental Science & Technology*, 44(15), 5836-5841.

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**Climate Change Effects: The Intersection of Science, Policy, and Resource Management in the USA.** Scarlett, L., 2010. *Journal of the North American Benthological Society*, 29(3), 892-903.

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**Retrospective Analysis of Fish Community Change during a Half-Century of Landuse and Streamflow Changes.** Gido, K.B., et al., 2010. *Journal of the North American Benthological Society*, 29(3), 970-987.

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**An Evaluation of Qualitative Indexes of Physical Habitat Applied to Agricultural Streams in Ten U.S. States.** Hughes, R.M., A.T. Herlihy, and P.R. Kaufmann, 2010. *Journal of the American Water Resources Association*, 46(4), 792-806.

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**Development of the Metropolitan Water Availability Index (MWAI) and Short-Term Assessment with Multi-Scale Remote Sensing Technologies.** Chang, N., et al., 2010. *Journal of Environmental Management*, 91(6), 1397-1413.

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**An Analysis of the Relationship Between Land Use and Arsenic, Vanadium, Nitrate and Boron Contamination in the Gulf Coast Aquifer of Texas.** Glenn, S.M. and L.J. Lester, 2010. *Journal of Hydrology*, 389(1-2), 214-226.

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**Effects of Past, Present, and Future Ocean Carbon Dioxide Concentrations on the Growth and Survival of Larval Shellfish.** Talmage, S.C. and C.J. Gobler, 2010. *Proceedings of the National Academy of Sciences*, 107(40), 17246-17251.

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**Suspended-Sediment Concentration Regimes for Two Biological Reference Streams in Middle Tennessee.** Diehl, T.H. and W. J. Wolfe, 2010. *Journal of the American Water Resources Association*, 46(4), 824-837.

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**Iron-Mediated Photochemical Decomposition of Methylmercury in an Arctic Alaskan Lake.** Hammerschmidt, C.R. and W.F. Fitzgerald, 2010. *Environmental Science & Technology*, 44(16), 6138-6143.

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**Ocean Warming Slows Coral Growth in the Central Red Sea.** Cantin, N.E., et al., 2010. *Science*, 329(5989), 322-325.

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**Global Phytoplankton Decline over the Past Century.** Boyce, D.G., et al., 2010. *Nature*, 466, 591-596.

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**Integrated Assessment of Oil Pollution Using Biological Monitoring and Chemical Fingerprinting.** Lewis, C., et al., 2010. *Environmental Toxicology and Chemistry*, 29(6), 1358-1366.

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**Assessment of Plant-Driven Removal of Emerging Organic Pollutants by Duckweed.** Reinhold, D., et al., 2010. *Chemosphere*, 80(7), 687-692.

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**Application and Validation of a GIS-Based Stream Bank Stability Tool for the Great Lakes Region.** Stone, A.G., et al., 2010. *Journal of Soil and Water Conservation*, 65(4), 92A-98A.

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**How Do We Identify Opportunities to Apply New Knowledge and Improve Conservation Effectiveness?** Tomer, M.D., 2010. *Journal of Soil and Water Conservation*, 65(4), 261-265.

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**Macroinvertebrate Tolerance Values and an Assemblage Tolerance Index (ATI) for Western USA Streams and Rivers.** Whittier, T.R. and J. Van Sickle, 2010. *Journal of the North American Benthological Society*, 29(3), 852-866.

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**Upper Thermal Tolerances of Early Life Stages of Freshwater Mussels.** Pandolfo, T.J., et al., 2010. *Journal of the North American Benthological Society*, 29(3), 959-969.

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**Linking Traits to Species Diversity and Community Structure in Phytoplankton.** Litchman, E., et al., 2010. *Hydrobiologia*, 653(1), 15-28.

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**The Combined Effects of Ocean Acidification, Mixing, and Respiration on pH and Carbonate Saturation in an Urbanized Estuary.** Feely, R.A., et al., 2010. *Estuarine, Coastal and Shelf Science*, 88(4), 442-449.

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**Spatio-Temporal Variation in the Characteristics of Dissolved Organic Matter in the Streams of Boreal Forests: Impacts on Modelled Copper Speciation.** Cuss, C.W., et al., 2010. *Chemosphere*, 80(7), 764-770.

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## *Upcoming Meetings*

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**Second International Congress on Sustainability Science and Engineering (ICOSSE '11).** January 9-13, 2011 in Tucson, AZ. Sustainable management of natural resources using scientific and engineering innovations.

Go to [icosse11.org](http://icosse11.org)

**Nutrient Recovery and Management 2011.** January 9-12, 2011 in Miami, FL.

Go to [www.wef.org/nutrient](http://www.wef.org/nutrient)

**Impaired Waters Symposium 2011: Spanning the Water Quality Continuum – From Standards to TMDLs.** January 12-13, 2011 in Miami, FL.

Go to [www.wef.org/ImpairedWaters](http://www.wef.org/ImpairedWaters)

## Other Products from ORD

### **Sustainable Chesapeake: A Collaborative Approach to Urban Stormwater Management.**

Requests research proposals on how to influence behavior to prevent pollution in Chesapeake Bay; specifically to identify collaborative (i.e., multi-entity) approaches to reduce urban stormwater inputs.

Go to [Article](#) or [www.epa.gov/ncer](http://www.epa.gov/ncer)

**Modeling Workshop Covered Thresholds in Stressors and Coral Reef Condition.** Experts examined sustainable delivery of coral reef ecosystem services. Models will aim to assist in setting thresholds and to establish a context for economic quantification.

Susan Yee, USEPA ORD/GED, yee.susan@epa.gov, 850-934-9397.

### **Interagency Working Group on Ocean Acidification Formed Under Joint Subcommittee for Ocean Science and Technology.**

William Fisher, USEPA ORD/GED, fisher.william@epa.gov, 850-934-9394.

**Coral Reef Management Decision Tool.** Will be posted to ESRP Web site for linking ecological and socioeconomic factors for coral reefs. Populated with a coral library, legislative atlas, and management options.

William Fisher, USEPA ORD/GED, fisher.william@epa.gov, 850-934-9394.

**MIMES Model for Estimating the Impacts of Decisions and Human Stressors on Coral Reef Ecosystem Services.** To be completed to assist with coral reef management decision options.

William Fisher, USEPA ORD/GED, fisher.william@epa.gov, 850-934-9394.

**Two Case Studies on Delivery of Coral Reef Ecosystem Services Linked to Watershed and Land-Use Activities.** To be used as guidance for future development and conservation decisions.

William Fisher, USEPA ORD/GED, fisher.william@epa.gov, 850-934-9394.