

US EPA ARCHIVE DOCUMENT



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

### *From EPA*

**Human Health Benchmarks for Pesticides in Water.** Benchmarks for 350 pesticide active ingredients will help determine if detection in drinking water may indicate a health risk.

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

**Toxicological Review of Tetrachloroethylene (Perchloroethylene).** EPA/635/R-08/011F. Final health assessment for the likely carcinogen, tetrachloroethylene (PCE). Will be used in revising the chemical's drinking water standard.

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

**Benchmark Dose Technical Guidance.** 100-R-12-001. For consistent dervation of benchmark doses for various uses; discusses data requirements, dose-response analyses, and reporting recommendations.

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

**Technical Brief – Rapid Viability PCR Method for Detection of Live *Bacillus anthracis* Spores.**

EPA/600/S-12/002. Following a biothreat agent release, rapid testing methods are needed.

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

**Unregulated Contaminant Monitoring Rule 3 (UCMR 3).** Required monitoring for 30 contaminants using EPA and consensus organization analytical methods during 2013-2015.

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

**Draft: Investigation of Ground Contamination near Pavillion, Wyoming.** DiGiulio, D.C., R.T. Wilkin, C. Miller, and G. Oberley, 2011. Ground water monitoring detects hydraulic fracturing fluids, including benzene, above SDWA standards.

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

**National Center for Environmental Economics (NCEE) – Do Regulators Overestimate the Costs of Regulation?** Working Paper # 11-07. Simpson, R.D., 2011. Study looks at questions of accuracy and bias in regulatory cost estimates.

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

**Draft Permitting Guidance for Using Diesel Fuel in Oil and Gas Hydraulic Fracturing.** EPA/816/R-12/004. Clarifies means of compliance with 2005 Amendments to the Safe Drinking Water Act.

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

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## *From Collaborators*

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**WaterRF – Development of a Bench-Scale Test to Predict the Formation of Nitrosamines.** Krasner, S., et al., 2012. Nitrosamine and disinfection by-product formation for a range of water qualities in distribution systems.

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

**WaterRF – State of the Science of Hexavalent Chromium in Drinking Water.** Review to inform regulatory action on the possible carcinogen.

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

**USGS – Methods for Evaluating Temporal Groundwater Quality Data and Results of Decadal-Scale Changes in Chloride, Dissolved Solids, and Nitrate Concentrations in Groundwater in the United States, 1988-2010.** Lindsey, B.D. and M.G. Rupert, 2012. No change for over half of wells; key changes in urban, agricultural areas.

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

**USGS – Principal Aquifers Can Contribute Radium to Sources of Drinking Water Under Certain Geochemical Conditions.** Szabo, Z., et al., 2012. Fact Sheet # 2010-3113. Influence of rock type and chemical processes on occurrence in aquifers.

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

**WaterRF – Are There More Toxin Genes Than Toxic Cyanobacteria? Implications for Enumeration, Toxicity, and Bloom Formation.** Monis, P., et al., 2012. To determine the validity of using molecular techniques for enumeration.

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

**CDC – Low Level Lead Exposure Harms Children: A Renewed Call for Primary Prevention.** Advisory Committee on Childhood Lead Poisoning Prevention. No identified blood level without effects; can extend beyond cognitive function.

Go to [Report](#) or [www.cdc.gov/nceh/lead](http://www.cdc.gov/nceh/lead)

**Draft Rule Requiring Public Disclosure of Chemicals Used in Hydraulic Fracturing on Public and Indian Lands.** Would require disclosure of hydraulic fracturing chemicals.

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

**AWWA Launches Hypochlorite Assessment Tool.** Determine storage-time and life-cycle based on rate of degradation and perchlorate formation.

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

**USGS – The Potential Effects of Sodium Bicarbonate, a Major Constituent of Produced Waters from Coalbed Natural Gas Production, on Aquatic Life.** Farag, A.M., and D.D. Harper, 2012. Scientific Investigations Report 2012-5008. Waters may contain large concentrations, harming aquatic life.

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

**USGS-NAWQA – Factors Affecting Groundwater Quality in the Valley and Ridge Aquifers, Eastern United States, 1993-2002.** Johnson, G.C., T.M. Zimmerman, B.D. Lindsey, and E.L. Gross, 2011. Bedrock type and land use were dominant factors in region from northwestern Georgia to New Jersey.

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

**AWWA – Regulatory Update: The Drinking Water Dozen.** Roberson, J.A., 2012. Meeting SDWA requirements for regulatory consideration of new contaminants and for reviewing existing regulations.

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

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## *From Journals*

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**Occurrence and Concentrations of Pharmaceutical Compounds in Groundwater Used for Public Drinking-Water Supply in California.** Fram, M.S. and K. Belitz, 2011. *Science of the Total Environment*, 409(18), 3409-3417.

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**Nationwide Assessment of Nitrosamine Occurrence and Trends.** Russell, C.G., et al., 2012. *Journal of the American Water Resources Association*, 104(3), E205-E217.

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**Predicted-No-Effect Concentrations for the Steroid Estrogens Estrone, 17 $\beta$ -Estradiol, Estriol, and 17 $\alpha$ -Ethinylestradiol.** Caldwell, D.J., et al., 2012. *Environmental Toxicology and Chemistry*, 31(6), 1396-1406.

Go to [Article](#)

**Chlorination in a Wastewater Treatment Plant: Acute Toxicity Effects of the Effluent and of the Recipient Water Body.** Pignata, C., et al., 2012. *Environmental Monitoring and Assessment*, 184(4), 2091-2103.

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**Toxic Groundwater Contaminants: An Overlooked Contributor to Urban Stream Syndrome?** Roy, J. W. and G. Bickerton, 2012. *Environmental Science & Technology*, 46(2), 729-736.

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**Steroid Hormone Runoff from Agricultural Test Plots Applied with Municipal Biosolids.** Yang, Y., et al., 2012. *Environmental Science & Technology*, 46(5), 2746-2754.

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**Developmental Toxicity Evaluations of Whole Mixtures of Disinfection By-products using Concentrated Drinking Water in Rats: Gestational and Lactational Effects of Sulfate and Sodium.** Narotsky, M.G., et al., 2012. *Birth Defects Research Part B: Developmental and Reproductive Toxicology*, 95(3), 202-212.

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**Pregnancy-Induced Hypertension “Probably Linked” to PFOA Contamination.** Holtcamp, W., 2012. *Environmental Health Perspectives*, 120(2), a59.

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**Endocrine Disruption Due to Estrogens Derived From Humans Predicted to be Low in the Majority of U.S. Surface Waters.** Anderson, P. D., et al., 2012. *Environmental Toxicology and Chemistry*, 31(6), 1407-1415.

Go to [Article](#)

**Occurrence of THM and NDMA Precursors in a Watershed: Effect of Seasons and Anthropogenic Pollution.** Aydin, E., et al., 2012. *Journal of Hazardous Materials*, 221-222, 86-91.

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**Watershed and Discharge Influences on the Phase Distribution and Tributary Loading of Total Mercury and Methylmercury Into Lake Superior.** Babiarz, C., et al., 2012. *Environmental Pollution*, 161, 299-310.

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**Effects of Cr III and Pb on the Bioaccumulation and Toxicity of Cd in Tropical Periphyton Communities: Implications of Pulsed Metal Exposures.** Bere, T., et al., 2012. *Environmental Pollution*, 163, 184-191.

Go to [Article](#)

**Illicit Drugs as New Environmental Pollutants: Cyto-Genotoxic Effects of Cocaine on the Biological Model *Dreissena polymorpha*.** Binelli, A., et al., 2012. *Chemosphere*, 86(9), 906-911.

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**Numeric Nutrient Criteria for Surface Waters: Coming to a Neighborhood Near You.** Charles, J. E. and W. E. Flowers, 2012. *Journal American Water Works Association*, 104(1), 14-18.

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**Effects of Silver Nanoparticles on Bacterial Activity in Natural Waters.** Das, P., et al., 2012. *Environmental Toxicology and Chemistry*, 31(1), 122-130.

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**Passive Sampling Provides Evidence for Newark Bay as a Source of Polychlorinated Dibenzo-*P*-Dioxins and Furans to the New York/New Jersey, USA, Atmosphere.** Friedman, C. L., et al., 2012. *Environmental Toxicology and Chemistry*, 31(2), 253-261.

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**Mercury Bioaccumulation in Estuarine Food Webs.** Fry, B. and M. M. Chumchal, 2012. *Ecological Applications*, 22(2), 606-623.

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**Vulnerability of Recently Recharged Groundwater in Principle Aquifers of the United States to Nitrate Contamination.** Gurdak, J. J. and S. L. Qi, 2012. *Environmental Science & Technology*, 46(11), 6004-6012.

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**Emerging Organic Contaminants in Groundwater: a Review of Sources, Fate and Occurrence.** Lapworth, D. J., et al., 2012. *Environmental Pollution*, 163, 287-303.

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**Dietary Bioaccumulation of Perfluorophosphonates and Perfluorophosphinates in Juvenile Rainbow Trout: Evidence of Metabolism of Perfluorophosphinates.** Lee, H., et al., 2012. *Environmental Science & Technology*, 46(6), 3489-3497.

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**Endocrine Disruption Potentials of Organophosphate Flame Retardants and Related Mechanisms in H295R and MVLN Cell Lines and in Zebrafish.** Liu, X., et al., 2012. *Aquatic Toxicology*, 114-115, 173-181.

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**Acute Toxicity of Cadmium, Lead, Zinc, and Their Mixtures to Stream-Resident Fish and Invertebrates.** Mebane, C. A., et al., 2012. *Environmental Toxicology and Chemistry*, 31(6), 1334-1348.

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**Uptake and Depuration of Pharmaceuticals in Aquatic Invertebrates.** Meredith-Williams, M., et al., 2012. *Environmental Pollution*, 165, 250-258.

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**New Effects of Roundup on Amphibians: Predators Reduce Herbicide Mortality; Herbicides Induce Antipredator Morphology.** Relyea, R. A., 2012. *Ecological Applications*, 22(2), 634-647.

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**Progestins and Antiprogestins Affect Gene Expression in Early Development in Zebrafish (*Danio rerio*) at Environmental Concentrations.** Zucchi, S., et al., 2012. *Environmental Science & Technology*, 46(9), 5183-5192.

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**Mixed Metals Toxicity: More than the Sum of Its Parts?** Spivey, A., 2012. *Environmental Health Perspectives*, 120(1), a35.

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**Glow Fish: A New Biosensor to Detect How Environmental Estrogens Affect Tissues.** Holtcamp, W., 2012. *Environmental Health Perspectives*, 120(7), a284.

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**Brain Anomalies in Children Exposed Prenatally to a Common Organophosphate Pesticide.** Rauha, V.A., 2012. *Proceedings of the National Academy of Sciences of the United States of America*, 109(20), 7871-7876.

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**Biogeographical Analysis of Chemical Co-Occurrence Data to Identify Priorities for Mixtures Research.** Tornero-Velez, R., P.P. Egeghy, and E.A. Cohen-Hubal., 2012. *Risk Analysis*, 32(2), 224-236.

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**Fecal Indicators and Zoonotic Pathogens in Household Drinking Water Taps Fed from Rainwater Tanks in Southeast Queensland, Australia.** Ahmed, W., et al., 2012. *Applied and Environmental Microbiology*, 78(1), 219-226.

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## *Upcoming Meetings*

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**SETAC North America 33rd Annual Meeting: Catching the Next Wave: Advancing Science Through Innovation and Collaboration.** November 11-15, 2012 in Long Beach, CA.

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

**2013 NGWA Summit - The National and International Conference on Groundwater.** April 28 - May 2, 2013 in San Antonio, TX.

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

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

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### *From EPA*

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**Discharge Monitoring Report (DMR) Pollutant Loading Tool.** 2007-2010 information on locations, pollutants, and amount of discharge.

Go to [cfpub.epa.gov/dmr/](http://cfpub.epa.gov/dmr/)

**Integrated Municipal Stormwater and Wastewater Planning Approach Framework, Memo.** Stoner, N., and C. Giles. More efficient, sustainable solutions to achieving CWA objectives.

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

**Inactivation of Bacterial Bioterrorism Agents in Water: Summary of Seven Studies.** EPA/600/R-12/521. Data is limited for inactivation.

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

**Climate Ready Water Utilities (CRWU) Initiative Makes Available Climate Resilience Evaluation and Awareness Tool (CREAT) Training Modules.**

Helps utilities understand climate change impacts, assess risks, and evaluate options.

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

**Adaptation Strategies Guide for Water Utilities.** EPA/817/K-11/003. Based on region and projected climate impacts.

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

**Coordination of the Water and Emergency Services Sectors: An Important Step to Better Response.** EPA/817/K-12/001. Vulnerable to threats that disrupt normal operations; consequences from incidents reduced with faster return to normal.

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

**New Testing Methods for Arsenic and Lead in Soil.** Could save millions in cleanup costs at Superfund sites.

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

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### *From Collaborators*

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**Direct Potable Reuse: Benefits for Public Water Supplies, Agriculture, the Environment, and Energy Conservation.** Schroeder, E., et al., 2012. NWRI-2012-01. May be an alternative to developing new water sources.

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

**WaterRF – Fate and Impact of Antibiotics in Slow-Rate Biofiltration Processes.** Wunder, D. and R. Hozalski, 2012. Investigation of the synergistic impacts of multiple antibiotics on biofilm bacteria used for slow-rate biofiltration processes worldwide.

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

**Water Reuse: Potential for Expanding the Nation's Water Supply through Reuse of Municipal Wastewater.** Committee on the Assessment of Water Reuse as an Approach to Meeting Future Water Supply Needs; National Research Council, 2012. Reclaimed water may be used for irrigation and industrial uses.

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

**Summary of Studies Related to Hydraulic Fracturing Conducted by USGS Water Science Centers.** Establish baseline water quantity and quality assessments as natural gas production accelerates.

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

**Contamination Warning System CIPAC Workgroup.** Critical Infrastructure Partnership Advisory Council (CIPAC) Drinking Water Contamination Warning System (CWS) Workgroup.

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

**AWWA – Computer Modeling of Water Distribution Systems, Third Edition.** M32. Build an accurate model of your water distribution system and solve hydraulics and water quality problems.

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

**AWWA – Buried No Longer: Confronting America's Water Infrastructure Challenge.** \$1 trillion needed to repair/replace buried drinking water infrastructure.

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

**WaterRF – Evaluation of Analytical Methods for EDCs and PPCPs via Interlaboratory Comparison.** Vanderford, B., et al., 2012. Will help utilities assess the most appropriate use of methods.

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

**DOE – New Energy Efficiency Standards for Residential Clothes Washers and Dishwashers to Save Consumers Billions on Energy Bills.** New standards produce significant savings while retaining consumer choice.

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

**NRDC – Financing Stormwater Retrofits in Philadelphia and Beyond.** Valderrama, A. and L. Levine, 2012. Reduced rates for property owners that keep rainfall onsite vs. sending it into storm drains.

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

**USACE – Estimating Solubility for Modeling the Fate of Heavy Metals with the Training Range Environmental Evaluation and Characterization System (TREECS™).** ERDC TN-EQT-12-1. Forecast munitions constituents to migration into surface water and groundwater systems.

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

**Financing Sustainable Water Infrastructure.** The Johnson Foundation, 2012. Sustainable, integrated water infrastructure financing models needed.

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

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## From Journals

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**Nanotechnology: What Are the Challenges and Emerging Benefits for Water Treatment?** Tuccillo, M.E., et al., 2012. *OpFlow*, 38(1), 10-13.

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**Management Experiences and Trends for Water Reuse Implementation in Northern California.** Bischel, H. N., et al., 2012. *Environmental Science & Technology*, 46(1), 180-188.

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**Diversity of a Chlorine-Resistant *Bacillus* Population Isolated from a Wastewater Treatment Station.** Paes, F., et al., 2012. *Water Environment Research*, 84(3), 274-281.

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**Hydraulic Impacts on Urban Drainage Systems Due to Changes in Rainfall Caused by Climatic Change.** Berggren, K., et al., 2012. *Journal of Hydrologic Engineering*, 17(1), 92-98.

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**Reactions of Phenylurea Compounds with Aqueous Chlorine: Implications for Herbicide Transformation During Drinking Water Disinfection.** Chusaksri, S., et al., 2012. *Journal of Hazardous Materials*, 209-210, 484-491.

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**Biological Nutrient Removal in Municipal Wastewater Treatment: New Directions in Sustainability.** Hu, Z. R., et al., 2012. *Journal of Environmental Engineering-Asce*, 138(3), 307-317.

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**A Methodology for Evaluating and Ranking Water Quantity Indicators in Support of Ecosystem-Based Management.** James, C. A., et al., 2012. *Environmental Management*, 49(3), 703-719.

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**Utilization of Multiple Organisms in a Proposed Early-Warning Biomonitoring System for Real-Time Detection of Contaminants: Preliminary Results and Modeling.** Maradona, A., et al., 2012. *Journal of Hazardous Materials*, 219-220, 95-102.

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**Embedding Sustainability Into a Utility's Business Culture.** Marlow, D. R., et al., 2012. *Journal American Water Works Association*, 104(2), 51-52.

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**Testing the Waters: Tucson Links Water Conservation with Environmental Benefits.** Nadeau, J. B., et al., 2012. *Journal American Water Works Association*, 104(2), 76-79.

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**Water Use for Shale-Gas Production in Texas, US.** Nicot, J. P. and B. R. Scanlon, 2012. *Environmental Science & Technology*, 46(6), 3580-3586.

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**Projecting Water Withdrawal and Supply for Future Decades in the U.S. Under Climate Change Scenarios.** Roy, S. B., et al., 2012. *Environmental Science & Technology*, 46(5), 2545-2556.

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**An Approach to Developing Numeric Water Quality Criteria for Coastal Waters Using the SeaWiFS Satellite Data Record.** Schaeffer, B. A., et al., 2012. *Environmental Science & Technology*, 46(2), 916-922.

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**Removal of Estrogens and Estrogenicity Through Drinking Water Treatment.** Schenck, K., et al., 2012. *Journal of Water and Health*, 10(1), 43-55.

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**Processes for the Elimination of Estrogenic Steroid Hormones From Water: A Review.** Silva, C. P., et al., 2012. *Environmental Pollution*, 165, 38-58.

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**Evaluation of the Disinfectant Performance of Silver Nanoparticles in Different Water Chemistry Conditions.** Zhang, H. Y. and V. Oyanedel-Craver, 2012. *Journal of Environmental Engineering-Asce*, 138(1), 58-66.

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**What Happens When Chloramines Meet Chlorine?** Farley, C.G., et al., 2012. *Opflow*.

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

**Assessing Ammonia Treatment Options.** Blute, N., et al., 2012. *Opflow*.

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

**Predicting Concentrations of Trace Organic Compounds in Municipal Wastewater Treatment Plant Sludge and Biosolids using the PhATE™ Model.** Cunningham, V.L., et al. 2012. *Integrated Environmental Assessment and Management*, 8(3), 530-542.

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**Utilities Provide UV Disinfection Lessons Learned.** Elliott, T. and P. Swaim, 2012. *Opflow*.

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

**Advanced Thermal Hydrolysis: Optimization of a Novel Thermochemical Process to Aid Sewage Sludge Treatment.** Abelleira, J., et al., 2012. *Environmental Science & Technology*, 46(11), 6158-6166.

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**Funding Water Conservation.** Ash, T., 2012. *Journal American Water Works Association*, 104(2), 67-73.

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**Building a Systemic Environmental Monitoring and Indicators for Sustainability: What Has the Ecological Network Approach to Offer?** Bodini, A., 2012. *Ecological Indicators*, 15(1), 140-148.

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**Tracking Artificial Sweeteners and Pharmaceuticals Introduced Into Urban Groundwater by Leaking Sewer Networks.** Wolf, L., et al., 2012. *Science of the Total Environment*, 430, 8-19.

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**Utilities Model Innovative Conservation Measures.** Maddaus, M., et al., 2012. *Opflow*,

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

**Isotopic Mapping of Groundwater Perchlorate Plumes.** Sturchio, N.C., et al., 2012. *Ground Water*, 50(1), 94-102.

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**Caffeine in Wastewater is a Tracer for Human Fecal Contamination.** Potera, C., 2012. *Environmental Health Perspectives*, 120(3), a108-a109.

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## Upcoming Meetings

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**SETAC North America 33rd Annual Meeting: Catching the Next Wave: Advancing Science Through Innovation and Collaboration.** November 11-15, 2012 in Long Beach, CA.

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

**Membrane Technology Conference & Exposition.** February 25-28, 2013 in San Antonio, TX.

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

**7th International Water Association (IWA) Specialist Conference on Efficient Use and Management of Water.** October 22-25, 2013 in Paris, France.

Go to [Meeting Page](#) or [www.iwaefficient.com](http://www.iwaefficient.com)

## 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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**Identifying and Protecting Healthy Watersheds: Concepts, Assessments, and Management Approaches.** Blake, L., et. al., 2012. EPA/841/B-11/002. Resource for states and the public interested in healthy watersheds assessments.

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

**The Economic Benefits of Protecting Healthy Watersheds.** EPA/841/N-12/004. High functioning natural systems provide ecosystem services that benefit social and economic well-being.

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

**Draft National Water Program 2012 Strategy: Response to Climate Change.** Addresses impacts on water resources and EPA's water programs.

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

**NCEE – Offset Markets for Nutrient and Sediment Discharges in the Chesapeake Bay Watershed: Policy Tradeoffs and Potential Steps Forward.** Manale, A., C. Morgan, G. Sheriff, and D. Simpson, 2011. Decrease costs of meeting TMDLs.

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

**Climate Ready Estuaries: 2011 Progress Report.** Craghan, M., and J. Martinich, 2011. EPA/842/R-11/004. Assess climate change vulnerabilities, develop adaptation strategies, and share the lessons learned.

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

**Climate Resilience Evaluation and Awareness Tool (CREAT) Exercise with North Hudson Sewerage Authority and New York-New Jersey Harbor Estuary Program.**

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

**NCEA – Vulnerability Assessments in Support of the Climate Ready Estuaries Program - Results for the San Francisco Estuary Partnership, Volume I and II.** EPA/600/R-11/058Fa and EPA/600/R-11/058Fb. Ecological vulnerability assessment using a novel methodology to inform adaptation planning.

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

**National Water Program Strategy: Response to Climate Change 2010 - 2011 National and Regional Highlights of Progress.** 2011. Accomplishments and activities to address climate change impacts on our water programs.

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

**EPA's National Coastal Condition Report IV.** EPA/842/R-10/003. Assessment of water and sediment quality, benthic community condition, habitat loss, and fish tissue contaminants.

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

**An Assessment of Potential Mining Impacts on Salmon Ecosystems of Bristol Bay, Alaska.** EPA/910/R-12/004a-d. Results will inform options to ensure compliance with the Clean Water Act.

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

**EPA Launches Competition for College Students to Develop Innovative Approaches to Stormwater Management.** Raises awareness of green design and planning approaches to help train the next generation.

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

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## *From Collaborators*

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### **NRDC Report Reveals 29 States Unprepared for Growing Water Threats to Economy, Health.**

Reveals nation's best and worst; CA, CO, FL, MD, MI, MN, NV, NH, NM, NY, OH, PA, TX, VA, WI highlighted.

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

**WaterRF – Developing a Roadmap and Vision for Source Water Protection for U.S. Drinking Water Utilities.** Sklenar, K., C.H. Sham, and R. W. Gullick, 2012. Help motivate, catalyze, plan new source water protection programs, and improve existing programs.

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

**EWG – Troubled Water: Farm Pollution Threatens Drinking Water.** Poor farming practices contaminate streams, lakes, and groundwater with fertilizer and manure.

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

**NRC – Progress Toward Restoring the Everglades: The Fourth Biennial Review.** National Academies. Improving quality and quantity of water is necessary to reverse ecosystem declines.

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

**USGS – Nutrient Concentrations and Loads in the Northeastern United States - Status and Trends, 1975-2003.** Trench, E.C.T., et al., 2012. Scientific Investigations Report 2011-5114.

Information on concentrations, trends, stream loads, and sources in the northeast.

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

**USGS-NAWQA – Development and Application of Indices to Assess the Condition of Benthic Algal Communities in U.S. Streams and Rivers.** Potapova, M., and D.M. Carlisle, 2011. Open File Report 2011-1126. Assesses impairment from land use disturbances.

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

**USGS – Seasonal Patterns in Nutrients, Carbon, and Algal Responses in Wadeable Streams within Three Geographically Distinct Areas of the United States, 2007-08.** Lee, K.E., et al., 2012.

Scientific Investigations Report 2012-5086.

Management of nutrients is challenging and due to multiple factors that affect stream nutrient concentrations and biological uptake.

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

**NRC – Review of the EPA's Economic Analysis of Final Water Quality Standards for Lakes and Flowing Waters in Florida.** National Academies.

Examination of analysis for implementation of numeric nutrient criteria in FL.

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

**USGS – Phosphorus and Groundwater: Establishing Links Between Agricultural Use and Transport to Streams.** Domagalski, J.L., and H.

Johnson, 2012. Fact Sheet 2012-3004. Could be used to formulate best management practices.

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

**USGS – Nutrient and Suspended-Sediment Trends, Loads, and Yields and Development of an Indicator of Streamwater Quality at Nontidal Sites in the Chesapeake Bay Watershed, 1985-2010.** Langland, M., et al., 2012. Scientific Investigations Report 2012-5093.

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

**USBR – New Online Application and Other Tools to Expand Public Access to Critical Data for Assessing Water Availability Across the Western U.S.** To improve information access and understanding impacts of climate variations.

Go to [Article](#) or [gis.usbr.gov/Streamflow\\_Projections](http://gis.usbr.gov/Streamflow_Projections)

**NRC – Approaches for Ecosystem Services Valuation for the Gulf of Mexico After the Deepwater Horizon Oil Spill: Interim Report.** National Academies. Options for expanding current effort to include analysis of ecosystem services.

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

# Water Research Update

**Sustainability of Water Resources: The Bridge - Linking Engineering and Society.** 2011. *The Bridge*, 41(4). Based on presentations at a convocation hosted by the National Academy of Engineering (NAE).

Go to [Journal Edition](#) or [www.nae.edu/TheBridge](http://www.nae.edu/TheBridge)

**USGS – Report to Congress: Strengthening the Scientific Understanding of Climate Change Impacts on Freshwater Resources of the United States.** 2011. Federal Interagency Panel on Climate Change and Water Data and Information.

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

**NRC – Challenges and Opportunities in the Hydrologic Sciences.** National Academies. Research opportunities could help improve human welfare and the health of the environment.

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

**Climate Change Suspended Reef Growth for 2 Millennia.** Aronson, R.B. and Toth, L.T, 2012. Shifts 4,000 years ago drove coral reefs in the eastern Pacific to a total collapse lasting 2,500 years.

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

**U.S. Department of Agriculture (USDA) National Agricultural Library's Water Quality Information Center Produces Two New Dynamic Bibliographies on Water Availability and Drought and Weather.** Scientific findings, educational methodologies, and public policies.

Go to [Report](#) or [wqic.nal.usda.gov](http://wqic.nal.usda.gov)

**USGS – Factors that Influence the Hydrologic Recovery of Wetlands in the Northern Tampa Bay Area, Florida.** Metz, P.A., 2012. Scientific Investigations Report 2011-5127. Largest influences: karst activity and the depth to the potentiometric surface of the aquifer.

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

**Draft National Ocean Policy Implementation Plan.** National Ocean Council. Actions to improve the health of the ocean, coasts, and Great Lakes.

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

**NOAA – Gulf of Mexico 'Dead Zone' Predictions Feature Uncertainty.** Sherman, B., and K. Capelli, 2012. Predicting this year's hypoxic zone could range from 1,197 to 6,213 square miles.

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

**USGS Details Effects of Climate Change on Water Availability in 14 Local Basins Nationwide.** Hay, L., S. Markstrom, and K. Capelli, 2012. Snowpack reductions, changes to timing of snowmelt, altered streamflows, and reductions in soil moisture.

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

**Deepwater Horizon Oil Spill Principal Investigator Workshop: Final Report.** Science advancements to address goals for restoring and managing the natural resources in the Gulf of Mexico.

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

**NAE and NRC – Macondo Well-Deepwater Horizon Blowout: Lessons for Offshore Drilling Safety.** National Academies. Committee for Analysis of Causes of the Deepwater Horizon Explosion, Fire, and Oil Spill to Identify Measures to Prevent Similar Accidents to the Future.

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

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## From Journals

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**In the Same Boat? Health Risks of Water Recreation Are Not Limited to Full-Contact Activities.** Holtcamp, W., 2012. *Environmental Health Perspectives*, 120(2), a77.

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**Is Urban Stream Restoration Worth It?** Kenney, M. A., et al., 2012. *Journal of the American Water Resources Association*, 48(3), 603-615.

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**The Challenge of Choosing Environmental Indicators of Anthropogenic Impacts in Estuaries.** Dafforn, K. A., et al., 2012. *Environmental Pollution*, 163, 207-217.

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**Quantifying Relationships Between Land-Use Gradients and Structural and Functional Indicators of Stream Ecological Integrity.** Clapcott, J. E., et al., 2012. *Freshwater Biology*, 57(1), 74-90.

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**Evaluation of Progress in Achieving TMDL Mandated Nitrogen Reductions in the Neuse River Basin, North Carolina.** Lebo, M. E., et al., 2012. *Environmental Management*, 49(1), 253-266.

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**Nitrate in the Mississippi River and Its Tributaries, 1980 to 2008: Are We Making Progress?** Sprague, L.A., et al., 2011. *Environmental Science & Technology*, 45(17), 7209-7216.

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**Factors Affecting Stream Nutrient Loads: A Synthesis of Regional SPARROW Model Results for the Continental United States.** Preston, S.D., et al., 2011. *Journal of the American Water Resources Association*, 47(5), 891-915.

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**Nutrient Loadings to Streams of the Continental United States from Municipal and Industrial Effluent.** Maupin, M.A. and T Ivahnenko, 2011. *Journal of the American Water Resources Association*, 47(5), 950-964.

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**Modeling the Potential Impact of Seasonal and Inactive Multi-Aquifer Wells on Contaminant Movement to Public Water-Supply Wells .** Johnson, R.L., et al., 2011. *Journal of the American Water Resources Association*, 47(3), 588-596.

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**Bioaccumulation of Trace Elements in Different Tissues of Three Commonly Available Fish Species Regarding Their Gender, Gonadosomatic Index, and Condition Factor in a Wetland Ecosystem.** Alhashemi, A. H., et al., 2012. *Environmental Monitoring and Assessment*, 184(4), 1865-1878.

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**Concentrations of Methylmercury in Invertebrates from Wetlands of the Prairie Pothole Region of North America.** Bates, L. M. and B. D. Hall, 2012. *Environmental Pollution*, 160, 153-160.

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**Metals, Nutrients and Total Suspended Solids Discharged During Different Flow Conditions in Highly Urbanised Catchments.** Beck, H. J. and G. F. Birch, 2012. *Environmental Monitoring and Assessment*, 184(2), 637-653.

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**Methylmercury and Dissolved Organic Carbon Relationships in a Wetland-Rich Watershed Impacted by Elevated Sulfate from Mining.** Berndt, M. E. and T. K. Bavin, 2012. *Environmental Pollution*, 161, 321-327.

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**The Effects of Multiple Stressors on Wetland Communities: Pesticides, Pathogens and Competing Amphibians.** Buck, J. C., et al., 2012. *Freshwater Biology*, 57(1), 61-73.

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**Geochemical and Strontium Isotope Characterization of Produced Waters from Marcellus Shale Natural Gas Extraction.** Chapman, E. C., et al., 2012. *Environmental Science & Technology*, 46(6), 3545-3553.

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**Application of U.S. EPA Guidelines in a Bioavailability-Based Assessment of Ambient Water Quality Criteria for Zinc in Freshwater.** DeForest, D. K. and E. J. Van Genderen, 2012. *Environmental Toxicology and Chemistry*, 31(6), 1264-1272.

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**Long-Term Changes in Oxygen Depletion in a Small Temperate Lake: Effects of Climate Change and Eutrophication.** Foley, B., et al., 2012. *Freshwater Biology*, 57(2), 278-289.

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**Sublethal Effects of Crude Oil on the Community Structure of Estuarine Phytoplankton.** Gilde, K. and J. L. Pinckney, 2012. *Estuaries and Coasts*, 35(3), 853-861.

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**Anthropogenic and Natural Sources of Acidity and Metals and Their Influence on the Structure of Stream Food Webs.** Hogsden, K. L. and J. S. Harding, 2012. *Environmental Pollution*, 162, 466-474.

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**Estimation of the Major Source and Sink of Methylmercury in the Florida Everglades.** Li, Y. B., et al., 2012. *Environmental Science & Technology*, 46(11), 5885-5893.

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**Simple Model of Changes in Stream Chloride Levels Attributable to Road Salt Applications.** Shaw, S. B., et al., 2012. *Journal of Environmental Engineering-Asce*, 138(1), 112-118.

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**Significance of Riverine Hypoxia for Fish: the Case of the Big Sunflower River, Mississippi.** Shields, F. D. and S. S. Knight, 2012. *Journal of the American Water Resources Association*, 48(1), 170-186.

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**Sensitivity Analysis of Best Management Practices Under Climate Change Scenarios.** Woznicki, S. A. and A. P. Nejadhashemi, 2012. *Journal of the American Water Resources Association*, 48(1), 90-112.

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**Multilevel Regression Models Describing Regional Patterns of Invertebrate and Algal Responses to Urbanization across the USA.** Cuffney, T.F., et al., 2011. *Journal of the North American Benthological Society*, 30(3), 797-819.

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**A Web-Based Decision Support System for Assessing Regional Water-Quality Conditions and Management Actions.** Booth, N.L., et al., 2011. *Journal of the American Water Resources Association*, 47(5), 1136-1150.

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**New Perspectives on Climate and Water.** Lovins, L. H., 2012. *Journal American Water Works Association*, 104(2), 32-38.

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**Occurrence and Potential Sources of Pyrethroid Insecticides in Stream Sediments from Seven U.S. Metropolitan Areas.** Kuivila, K.M., et al., 2012. *Environmental Science & Technology*, 46(8), 4297-4303.

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**Mapping Critical Loads of Nitrogen Deposition for Aquatic Ecosystems in the Rocky Mountains, USA.** Nanus, L., et al., 2012. *Environmental Pollution*, 166, 125-135.

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**Subsurface Transport of Orthophosphate in Five Agricultural Watersheds, USA.** Domagalskia, J.L. and H.M. Johnson, 2011. *Journal of Hydrology*, 409(1-2), 157-171.

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**Impact of the Deepwater Horizon Oil Spill on Bioavailable Polycyclic Aromatic Hydrocarbons in Gulf of Mexico Coastal Waters.** Allan, S. E., et al., 2012. *Environmental Science & Technology*, 46(4), 2033-2039.

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## Upcoming Meetings

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**5th National Conference on Ecosystem Restoration.** NCER. July 29 - August 2, 2013 in Chicago, IL.

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