EPA Office of Water
Recent Water Research
July - December 2015 No. 2015-2

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

From EPA

Algal Toxin Risk Assessment and Management Strategic Plan for Drinking Water. EPA-810-R-04-003. Collaboration across all levels of government needed to provide scientific and technical leadership; work on treatment and monitoring technologies; assist water systems.

Go to Report or www.epa.gov/nutrient-policy-data

From Collaborators

WRF – NITROSAMINE OCCURRENCE SURVEY - Stuart W., et al., 2016. WRF Report 4461.

Collected data from finished water at 37 wastewater treatment plants to determine the occurrence of nitrosamines. Precursors included: some polymers, chloramines, and seasonal changes in raw water. Recommendations to determine source of precursors; examine nitrosamine occurrence, precursor loading, and treatment efficacy seasonally and annually; and reduce precursors and NDMA.

Managing Water Quality in the Face of Uncertainty: A Robust Decision Making Demonstration for EPA's National Water Program. Fischbach, J.R., et al., 2015. RAND Corporation. Exploration of RDM methods to meet total maximum daily load requirements, given uncertainties with climate, land use, and BMPs.

Go to Report or www.rand.org/pubs/research_reports.html

USGS – Water Quality, Cyanobacteria, and Environmental Factors and Their Relations to Microcystin Concentrations for Use in Predictive Models at Ohio Lake Erie and Inland Lake Recreational Sites, 2013-14. Francy, D.S., et al., 2015. USGS Scientific Investigations Report 2015-5120. Data from Ohio recreational sites (2013-2014) used as water-quality and environmental variables are useful in predictive models. More study needed.

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Regulated and Emerging Disinfection Byproducts during the Production of High Quality Recycled Water. Farré, M.J. and H.S. Weinberg, 2015. WateReuse Project: 10-18. Survey of temperature and pH impacts on DBP formation in recycled water; removal efficiency of reverse osmosis and nanofiltration.

Go to Report or www.watereuse.org

From Journals

Water Footprint of Hydraulic Fracturing. Kondash, A. and A. Vengosh, 2015. *Environmental Science & Technology Letters,* 2(10), 276-280.

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Mechanistic Study on the Formation of Cl-/Br-/I-Trihalomethanes during Chlorination/Chloramination Combined with a Theoretical Cytotoxicity Evaluation. Allard, S., et al., 2015. *Environmental Science & Technology,* 49(18), 11105-11114.

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Reservoir Sediments: A Sink or Source of Chemicals at the Surface Water-Groundwater Interface. Ammar, R., et al., 2015. *Environmental Monitoring and Assessment,* 187(9).

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The USEPA Clean Power Plan: Challenges and Opportunities for Water Utilities. Aubuchon, C.P. and A.T. Carpenter, 2015. *Journal American Water Works Association,* 107(10), 62-71.

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Using Agent-Based Modeling for Water Resources Planning and Management. Berglund, E.Z., 2015. *Journal of Water Resources Planning and Management,* 141(11).

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***Legionella pneumophila*: From Potable Water to Treated Greywater; Quantification and Removal during Treatment.** Blanky, M., et al., 2015. *Science of the Total Environment,* 533, 557-565.

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Bloom-Forming Microalgae in High-Species Phytoplankton Assemblages under Light-Fluctuating and Low Phosphate Conditions. Fernandez-Rodriguez, M., et al., 2015. *Estuaries and Coasts,* 38(5), 1642-1655.

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Biological Drinking Water Treatment? Naturally. Brown, J., et al., 2015. *Journal American Water Works Association,* 107(12), 20-30.

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Epidemiological Study for the Assessment of Health Risks Associated With Graywater Reuse for Irrigation in Arid Regions. Busgang, A., et al., 2015. *Science of the Total Environment,* 538, 230-239.

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Investigation of Cost and Energy Optimization of Drinking Water Distribution Systems. Cherchi, C., et al., 2015. *Environmental Science & Technology,* 49(22), 13724-13732.

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Copper Deposition Corrosion Elevates Lead Release to Potable Water. Clark, B., et al., 2015. *Journal American Water Works Association,* 107(11), 98-99.

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Drivers of an Urban Community's Acceptance of a Large Desalination Scheme for Drinking Water. Gibson, F.L., et al., 2015. *Journal of Hydrology,* 528, 38-44.

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Towards Spatially Smart Abatement of Human Pharmaceuticals in Surface Waters: Defining Impact of Sewage Treatment Plants on Susceptible Functions. Coppens, L.J.C., et al., 2015. *Water Research,* 81, 356-365.

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Occurrence of Pharmaceutical Compounds and Pesticides in Aquatic Systems. Gonzalez-Rey, M., et al., 2015. *Marine Pollution Bulletin,* 96(1-2), 384-400.

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Disinfection By-Product Formation during Seawater Desalination: A Review. Kim, D., et al., 2015. *Water Research,* 81, 343-355.

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Quantitative *Campylobacter* spp., Antibiotic Resistance Genes, and Veterinary Antibiotics in Surface and Ground Water Following Manure Application: Influence of Tile Drainage Control. Frey, S.K., et al., 2015. *Science of the Total Environment,* 532, 138-153.

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Insights on Chlorate Occurrence, Intra-System Variability, and Source Water Concentrations. Gorzalski, A.S. and A.L. Spiesman, 2015. *Journal American Water Works Association,* 107(11), 97-97.

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A Hydrodynamics-Based Approach to Evaluating the Risk of Waterborne Pathogens Entering Drinking Water Intakes in a Large, Stratified Lake. Hoyer, A.B., et al., 2015. *Water Research,* 83, 227-236.

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Potable Reuse Water and Pricing: What Does the Future Hold? Kostiuk, K., et al., 2015. *Journal American Water Works Association,* 107(7), 28-32.

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The State of Water/Wastewater Utility Sustainability: A North American Survey. Landis, A.E., 2015. *Journal American Water Works Association,* 107(9), 91-91.

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Tracking Changes in the Optical Properties and Molecular Composition of Dissolved Organic Matter during Drinking Water Production. Lavonen, E.E., et al., 2015. *Water Research,* 85, 286-294.

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Multiplex PMA-qPCR Assay with Internal Amplification Control for Simultaneous Detection of Viable *Legionella pneumophila*, *Salmonella typhimurium*, and *Staphylococcus aureus* in Environmental Waters. Li, H.Y., et al., 2015. *Environmental Science & Technology,* 49(24), 14249-14256.

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Applying the Polarity Rapid Assessment Method to Characterize Nitrosamine Precursors and to Understand Their Removal by Drinking Water Treatment Processes. Liao, X.B., et al., 2015. *Water Research,* 87, 292-298.

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Mixing Regime as a Key Factor to Determine Don Formation in Drinking Water Biological Treatment. Lu, C.Q., et al., 2015. *Chemosphere,* 139, 638-643.

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New Insights towards the Establishment of Phycocyanin Concentration Thresholds Considering Species-Specific Variability of Bloom-Forming Cyanobacteria. Macario, I.P.E., et al., 2015. *Hydrobiologia,* 757(1), 155-165.

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Determinants of Disinfectant Pretreatment Efficacy for Nitrosamine Control in Chloraminated Drinking Water. McCurry, D.L., et al., 2015. *Water Research,* 84, 161-170.

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How a Drought-Resilient Water Delivery System Rose Out of the Desert: The Case of Tucson Water. Megdal, S.B. and A. Forrest, 2015. *Journal American Water Works Association,* 107(9): 46-52.

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Cyanobacterial Dynamics in Shallow Lake Apopka (Florida, USA) Before and After the Shift from a Macrophyte-Dominated to a Phytoplankton-Dominated State. Waters, M.N., et al., 2015. *Freshwater Biology,* 60(8), 1571-1580.

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Fate of Extended-Spectrum beta-Lactamase-Producing *Escherichia coli* from Faecal Sources in Surface Water and Probability of Human Exposure through Swimming. Schijyen, J.F., et al., 2015. *Environmental Science & Technology,* 49(19), 11825-11833.

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Reduced Efficiency of Chlorine Disinfection of *Naegleria fowleri* in a Drinking Water Distribution Biofilm. Miller, H.C., et al., 2015. *Environmental Science & Technology,* 49(18), 11125-11131.

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Spatial, Temporal, and Matrix Variability of *Clostridium botulinum* Type E Toxin Gene Distribution at Great Lakes Beaches. Wijesinghe, R.U., et al., 2015. *Applied and Environmental Microbiology,* 81(13), 4306-4315.

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Removal of Fluoride from Drinking Water Using Novel Adsorbent Magnesia-Hydroxyapatite. Mondal, P. and S. George, 2015. *Water Air and Soil Pollution,* 226(8), K124-K125.

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Modelling Total Suspended Solids, *E. coli* and Carbamazepine, a Tracer of Wastewater Contamination From Combined Sewer Overflows. Pongmala, K., et al., 2015. *Journal of Hydrology,* 531, 830-839.

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Regulating Chlorophyll-*a* to Control DBP Precursors in Water Supply Reservoirs. Saunders, J.F., et al., 2015. *Journal American Water Works Association,* 107(11), 96-96.

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Microbial Risk Assessment of Drinking Water Based on Hydrodynamic Modelling of Pathogen Concentrations in Source Water. Sokolova, E., et al., 2015. *Science of the Total Environment,* 526, 177-186.

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Fecal Pollution Source Tracking Toolbox for Identification, Evaluation and Characterization of Fecal Contamination in Receiving Urban Surface Waters and Groundwater. Tran, N.H., et al., 2015. *Science of the Total Environment,* 538, 38-57.

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Characterization, Recovery Opportunities, and Valuation of Metals in Municipal Sludges from U.S. Wastewater Treatment Plants Nationwide. Westerhoff, P., et al., 2015. *Environmental Science & Technology,* 49(16), 9479-9488.

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Human Risk Assessment for Nonylphenol. Osimitz, T.G., et al., 2015. *Human and Ecological Risk Assessment,* 21(7), 1903-1919.

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Seasonal and Spatial Variability of Nitrosamines and Their Precursor Sources at a Large-Scale Urban Drinking Water System. Woods, G.C., et al., 2015. *Science of the Total Environment,* 520, 120-126.

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Trihalomethane Hydrolysis in Drinking Water at Elevated Temperatures. Zhang, X.L., et al., 2015. *Water Research,* 78, 18-27.

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Deriving Nutrient Targets to Prevent Excessive Cyanobacterial Densities in U.S. Lakes and Reservoirs. Yuan, L.L. and A.I. Pollard, 2015. *Freshwater Biology,* 60(9), 1901-1916.

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Contribution of N-Nitrosamines and Their Precursors to Domestic Sewage by Greywaters and Blackwaters. Zeng, T. and W.A. Mitch, 2015. *Environmental Science & Technology,* 49(22), 13158-13167.

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Recent and Upcoming Meetings

RECENT:

AWWA – The Utility Management Conference™ 2016. February 24-27, 2016 in San Diego, CA.

Go to Meeting Page or www.awwa.org/conferences-education/conferences.aspx

Recent Water Research

ASDWA 2016 Annual Conference. March 21-24, 2016 in Alexandria, VA.

Go to Meeting Page or www.asdwa.org

2016 Federal Water Issues Conference. April 10-13, 2016 in Washington, DC.

Go to Meeting Page or www.nwra.org

UPCOMING:

AWWA ACE 16. June 20-22, 2016 in Chicago, IL.

Go to Meeting Page or www.awwa.org/conferences-education/conferences

WEFTEC 2016. September 24-28, 2016 in New Orleans, LA.

Go to Meeting Page or www.weftec.org

AMWA 2016 Annual Meeting. October 16-19, 2016 in Scottsdale, AZ.

Go to Meeting Page or www.amwa.net

SETAC North America 37th Annual Meeting. November 6-10, 2016 in Orlando, FL.

Go to Meeting Page or www.setac.org

NWRA Annual Conference. November 14-16, 2016 in Coronado, CA.

Go to Meeting Page or www.nwra.org

Innovative and Affordable Tools and Technologies for Sustainable Public Health Protection

From Collaborators

Water Resource Challenges and Opportunities for Water Technology Innovation. The White House, 2015. Focus on climate change impacts on stressed water resources; White House strategy to promote water-efficiency and investment in R&D.

Go to Report or www.whitehouse.gov

UPCOMING:

Microbial Electrolytic Carbon Capture for Carbon Negative and Energy Positive Wastewater Treatment. Lu, L., et al., 2015. *Environmental Science & Technology,* 49(13), 8193–8201.

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Open-Source Photometric System for Enzymatic Nitrate Quantification. Wittbrodt, B.T., et al., 2015. *PLoS ONE,* 10(8).

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Kinetics of Chlorination of Benzophenone-3 in the Presence of Bromide and Ammonia. Abdallah, P., et al., 2015. *Environmental Science & Technology,* 49(24), 14359-14367.

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New Filtration System for Efficient Recovery of Waterborne *Cryptosporidium* oocysts and *Giardia* cysts. Al-Sabi, M.N.S., et al., 2015. *Journal of Applied Microbiology,* 119(3), 894-903.

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An Ultrasensitive (Parts-Per-Quadrillion) and SPE-Free Method for the Quantitative Analysis of Estrogens in Surface Water. Backe, W.J., 2015. *Environmental Science & Technology,* 49(24), 14311-14318.

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A Study of Enhanced Performance of VUV/UV Process for the Degradation of Micropollutants from Contaminated Water. Bagheri, M. and M. Mohseni, 2015. *Journal of Hazardous Materials,* 294, 42377.

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Point-of-Use Removal of *Cryptosporidium parvum* from Water: Independent Effects of Disinfection by Silver Nanoparticles and Silver Ions and by Physical Filtration in Ceramic Porous Media. Abebe, L.S., et al., 2015. *Environmental Science & Technology,* 49(21), 12958-12967.

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Exploitation of Nanotechnology for the Monitoring of Waterborne Pathogens: State-of-the-Art and Future Research Priorities. Bridle, H., et al., 2015. *Environmental Science & Technology,* 49(18), 10762-10777.

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Holding-Time and Method Comparisons for the Analysis of Fecal-Indicator Bacteria in Groundwater. Bushon, R.N., et al., 2015. *Environmental Monitoring and Assessment,* 187(11).

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Degradation of Pharmaceutical Compounds in Water by Non-Thermal Plasma Treatment. Magureanu, M., et al., 2015. *Water Research,* 81, 124-136.

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Cyanotoxin Bioaccumulation in Freshwater Fish, Washington State, USA. Hardy, F.J., et al., 2015. *Environmental Monitoring and Assessment,* 187(11).

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New Antimicrobially Amended Media for Improved Nonpoint Source Bacterial Pollution Treatment. Schifman, L.A., et al., 2015. *Environmental Science & Technology,* 49(24), 14383-14391.

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Prioritization Methodology for the Monitoring of Active Pharmaceutical Ingredients in Hospital Effluents. Daouk, S., et al., 2015. *Journal of Environmental Management,* 160, 324-332.

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Direct UV Photolysis of Selected Pharmaceuticals, Personal Care Products and Endocrine Disruptors in Aqueous Solution. Carlson, J.C., et al., 2015. *Water Research,* 84, 350-361.

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Development and Validation of an In-house Quantitative Analysis Method for Cylindrospermopsin Using Hydrophilic Interaction Liquid Chromatography-Tandem Mass Spectrometry: Quantification Demonstrated in 4 Aquatic Organisms. Esterhuizen-Londt, M., et al., 2015. *Environmental Toxicology and Chemistry,* 34(12), 2878-2883.

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Non-Conventional Biological Treatment Based on Trametes Versicolor for the Elimination of Recalcitrant Anticancer Drugs in Hospital Wastewater. Ferrando-Climent, L., et al., 2015. *Chemosphere,* 136, 9-19.

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Removing Selected Steroid Hormones, Biocides and Pharmaceuticals from Water by Means of Biogenic Manganese Oxide Nanoparticles *in situ* at ppb Levels. Furgal, K.M., et al., 2015. *Chemosphere,* 136, 321-326.

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EDTA Functionalized Magnetic Nanoparticle Sorbents for Cadmium and Lead Contaminated Water Treatment. Huang, Y.X. and A.A. Keller, 2015. *Water Research,* 80, 159-168.

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Adsorption of Emerging Pollutants on Functionalized Multiwall Carbon Nanotubes. Patino, Y., et al., 2015. *Chemosphere,* 136, 174-180.

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Application of Remote Sensing for the Optimization of *in situ* Sampling for Monitoring of Phytoplankton Abundance in a Large Lake. Kiefer, I., et al., 2015. *Science of the Total Environment,* 527, 493-506.

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Removal of the Anti-Cancer Drug Methotrexate from Water by Advanced Oxidation Processes: Aerobic Biodegradation and Toxicity Studies after Treatment. Lutterbeck, C.A., et al., 2015. *Chemosphere,* 141, 290-296.

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Application of Cellular Biosensors for Detection of Atypical Toxic Bioactivity in Microcystin-Containing Cyanobacterial Extracts. Mankiewicz-Boczek, J., et al., 2015. *Aquatic Toxicology,* 168, 42379.

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Application of ICP-OES for Evaluating Energy Extraction and Production Wastewater Discharge Impacts on Surface Waters in Western Pennsylvania. Pancras, J.P., **G.A Norris**, **M.S. Landis**, **K.D. Kovalcik**, **J.K. McGee**, and **A.S. Kamal**, 2015. *Science of the Total Environment,* 529, 21-29.

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Removing Organic and Nitrogen Content from a Highly Saline Municipal Wastewater Reverse Osmosis Concentrate by UV/H_2O_2-BAC Treatment. Pradhan, S., et al., 2015. *Chemosphere,* 136, 198-203.

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Quantifying and Reducing Uncertainty in Estimated Microcystin Concentrations from the ELISA Method. Qian, S.S., et al., 2015. *Environmental Science & Technology,* 49(24), 14221-14229.

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Source Separation of Urine as an Alternative Solution to Nutrient Management in Biological Nutrient Removal Treatment Plants. Jimenez, J. et al., 2015. *Water Environment Research,* 87(12), 2120-2129.

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Label-Free Electrical Immunosensor for Highly Sensitive and Specific Detection of Microcystin-LR in Water Samples. Tan, F., et al., 2015. *Environmental Science & Technology,* 49(15), 9256-9263.

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Fluoride and Nitrate Removal from Brackish Groundwaters by Batch-Mode Capacitive Deionization. Tang, W.W., et al., 2015. *Water Research,* 84, 342-349.

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Comparison of Quantitative PCR and Droplet Digital PCR Multiplex Assays for Two Genera of Bloom-Forming Cyanobacteria, *Cylindrospermopsis* and *Microcystis*. Te, S.H., et al., 2015. *Applied and Environmental Microbiology,* 81(15), 5203-5211.

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A Combination of Electro-Enzymatic Catalysis and Electrocoagulation for the Removal of Endocrine Disrupting Chemicals from Water. Zhao, H., et al., 2015. *Journal of Hazardous Materials,* 297, 269-277.

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Recent and Upcoming Meetings

RECENT:

White House Water Summit. March 22, 2016 in Washington, DC.

Go to Meeting Page or www.whitehouse.gov

UPCOMING:

Water Summit 2016. June 14-15, 2016 in Milwaukee, WI.

Go to Meeting Page or www.thewatercouncil.com/events

Water Quality Technology Conference® & Exposition. November 13-17, 2015 in Indianapolis, IN.

Go to Meeting Page or www.awwa.org

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

From EPA

Case Studies on Implementing Low-Cost Modifications to Improve Nutrient Reduction at Wastewater Treatment Plants. EPA-841-R-15-004. Reduced nutrient discharge 20-70% while also improving energy efficiency, operational costs, and process performance.

Go to Report or www.epa.gov/nscep

From Collaborators

USGS – Sea-Level Rise Modeling Handbook: Resource Guide for Coastal Land Managers, Engineers, and Scientists. Doyle, T.W., et al., 2015. USGS Professional Paper 1815. Synthesis of tools, models for projecting causes and consequences of sea-level change on landscape and seascape.

Go to Report

USGS – Air- and Stream-Water-Temperature Trends in the Chesapeake Bay Region, 1960–2014. Jastram, J.D. and K.C. Rice, 2015. USGS Open-File Report 2015-1207. Analyses of air and water temperature demonstrate warming in both; indicators for use in EPA climate report.

Go to Report or pubs.er.usgs.gov

Energy-Positive Water Resource Recovery Workshop Report. NSF, U.S. DOE, and EPA, 2015. Collaborative recommendations on research/actions needed to focus on "water resource recovery" to generate assets: drinking water, biofuels and chemicals.

Go to Report or www.energy.gov/eere

State of the Climate in 2014. Blunden, J. and D.S. Arndt, Eds., 2015. *Bulletin of the American Meteorological Society,* 96(7), S1-S267. Global climate indicators (weather events, land, water, ice, and space climate data) reflect trends of a warming planet; temperatures set new records.

Go to Report or journals.ametsoc.org

USGS – U.S. Geological Survey Chesapeake Science Strategy, 2015–2025—Informing Ecosystem Management of America's Largest Estuary. Phillips, S. and B. Joel, 2015. USGS Open-File Report 2015-1162. Strategy guiding science to support Bay restoration efforts, aligned with other USGS science strategies.

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From Journals

Implementing Innovative Drainage Management Practices in the Mississippi River Basin to Enhance Nutrient Reductions. Kröger, R., et al., 2015. *Journal of the American Water Resources Association,* 51(4), 1020–1028.

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Effects of Annual Precipitation on Heavy Metals in Runoff from Soils in the U.S. Great Plains. Elrashidi, M.A., et al., 2015. *Water Air and Soil Pollution,* 226(12).

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Climate Effects on Phytoplankton Floral Composition in Chesapeake Bay. Harding, L.W., et al., 2015. *Estuarine Coastal and Shelf Science,* 162, 53-68.

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Extreme Water Quality Degradation Following a Catastrophic Forest Fire. Dahm, C.N., et al., 2015. *Freshwater Biology,* 60(12), 2584-2599.

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Long-Term Trends of Nutrients and Sediment from the Nontidal Chesapeake Watershed: An Assessment of Progress by River and Season. Zhang, Q., et al., 2015. *Journal of the American Water Resources Association,* 51(6), 1534–1555.

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Modeling Streamflow and Water Quality Sensitivity to Climate Change and Urban Development in 20 U.S. Watersheds. Johnson, T., et al., 2015. *Journal of the American Water Resources Association,* 51(5), 1321–1341.

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Resolving Water Conflicts in the American West. McKinney, M. and J.E. Thorson, 2015. *Water Policy,* 17(4), 679–706. Approaches for adaptive and collaborative governing of scarce water resources.

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Sources and Transport of Phosphorus to Rivers in California and Adjacent States, U.S., as Determined by Sparrow Modeling. Domagalski, J. and D. Saleh, 2015. *Journal of the American Water Resources Association,* 51(6), 1463–1486.

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Efficient Wetland Surface Water Detection and Monitoring via Landsat: Comparison with *in situ* Data from the Everglades Depth Estimation Network. Jones, J.W., 2015. *Remote Sensing,* 119(3), 894-903.

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Use of Stable Isotope Signatures to Determine Mercury Sources in the Great Lakes. Lepak, R.F., et al., 2015. *Environmental Science & Technology Letters,* 2(12), 335-341.

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An Analysis of the Effects of Land Use and Land Cover on Flood Losses along the Gulf Of Mexico Coast from 1999 to 2009. Brody, S.D., et al., 2015. *Journal of the American Water Resources Association,* 51(6), 1556–1567.

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Mixed Effects of Effluents from a Wastewater Treatment Plant on River Ecosystem Metabolism: Subsidy or Stress? Aristi, I., et al., 2015. *Freshwater Biology,* 60(7), 1398-1410.

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A Hierarchical Model for Estimating Long-Term Trend of Atrazine Concentration in the Surface Water of the Contiguous U.S. Yun, J. and S.S. Qian, 2015. *Journal of the American Water Resources Association,* 51(4), 1128–1137.

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Changes in Depth Occupied by Great Lakes Lake Whitefish Populations and the Influence of Survey Design. Rennie, M.D., et al., 2015. *Journal of Great Lakes Research,* 41(4), 1150-1161.

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Multi-Objective Operations of Multi-Wetland Ecosystem: iModel Applied to the Everglades Restoration. Ali, A., 2015. *Journal of Water Resources Planning and Management,* 141(9).

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From Rain Tanks to Catchments: Use of Low-Impact Development to Address Hydrologic Symptoms of the Urban Stream Syndrome. Askarizadeh, A., et al., 2015. *Environmental Science & Technology,* 49(19), 11264-11280.

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Instream Bacteria Influences from Bird Habitation of Bridges. David Pendergrass, et al., 2015. *Journal of the American Water Resources Association,* 51(6), 1519–1533.

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Persistent Organic Pollutants (POPs) in Blubber of Common Bottlenose Dolphins (*Tursiops truncatus*) along the Northern Gulf of Mexico Coast, USA. Balmer, B.C., et al., 2015. *Science of the Total Environment,* 527, 306-312.

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Surprise and Opportunity for Learning in Grand Canyon: The Glen Canyon Dam Adaptive Management Program. Melis, T.S., et al., 2015. *Ecology and Society,* 20(3), 22. Focuses on unexpected results and adaptive learning from field-scale ecosystem experiments.

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Soil and Phosphorus Accretion Rates in Sub-Tropical Wetlands: Everglades Stormwater Treatment Areas as a Case Example. Bhomia, R.K., et al., 2015. *Science of the Total Environment,* 533, 297-306.

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Long Term Water Clarity Changes in North America's Great Lakes from Multi-Sensor Satellite Observations. Binding, C.E., et al., 2015. *Limnology and Oceanography,* 60(6), 1976-1995.

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Flux of Total Mercury and Methylmercury to the Northern Gulf of Mexico from U.S. Estuaries. Buck, C.S., et al., 2015. *Environmental Science & Technology,* 49(24), 13992-13999.

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Strategic Planning for Drought Mitigation under Climate Change. Cai, X.M., et al., 2015. *Journal of Water Resources Planning and Management,* 141(9).

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Influence of Land Use, Nutrients, and Geography on Microbial Communities and Fecal Indicator Abundance at Lake Michigan Beaches. Cloutier, D.D., et al., 2015. *Applied and Environmental Microbiology,* 81(15), 4904-4913.

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Coupled Atmospheric, Land Surface, and Subsurface Modeling: Exploring Water and Energy Feedbacks in Three-Dimensions. Davison, J.H., et al., 2015. *Advances in Water Resources,* 86, 73-85.

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A Budget Analysis of Bottom-Water Dissolved Oxygen in Chesapeake Bay. Li, Y., et al., 2015. *Estuaries and Coasts,* 38(6), 2132-2148.

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What's Normal For Fracking? Estimating Total Radioactivity of Produced Fluids. Konkel, L., 2015. *Environmental Health Perspectives,* 123(7), A186-A186.

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The Efficacy of Constructed Stream-Wetland Complexes at Reducing the Flux of Suspended Solids to Chesapeake Bay. Filoso, S., et al., 2015. *Environmental Science & Technology,* 49(15), 8986-8994.

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Suspended Particulate Matter Transport of Polycyclic Aromatic Hydrocarbons in the Lower Columbia River and Its Estuary. Gregg, T., et al., 2015. *Limnology and Oceanography,* 60(6), 1935-1949.

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Pharmaceuticals and Other Anthropogenic Tracers in Surface Water: A Randomized Survey of 50 Minnesota Lakes. Ferrey, M.L., et al., 2015. *Environmental Toxicology and Chemistry,* 34(11), 2475-2488.

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Do Pharmaceuticals Pose a Threat to Primary Producers? Guo, J.H., et al., 2015. *Critical Reviews in Environmental Science and Technology,* 45(23), 2565-2610.

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Three Decadal Inputs of Nitrogen and Phosphorus from Four Major Coastal Rivers to the Summer Hypoxic Zone of the Northern Gulf of Mexico. He, S.J. and Y.J. Xu, 2015. *Water Air and Soil Pollution,* 226(9).

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Spatially Explicit Fate Modelling of Nanomaterials in Natural Waters. Quik, J.T.K., et al., 2015. *Water Research,* 80, 200-208.

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Contribution of Nutrient and Organic Matter Sources to the Development of Periodic Hypoxia in a Tributary Estuary. Lake, S.J. and M.J. Brush, 2015. *Estuaries and Coasts,* 38(6), 2149-2171.

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Extreme Hydrological Events and the Ecological Restoration of Flowing Waters. Reich, P. and P.S. Lake, 2015. *Freshwater Biology,* 60(12), 2639-2652.

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Investigating the Impact of Land Use and the Potential for Harmful Algal Blooms in a Tropical Lagoon of the Gulf of Mexico. Limoges, A., et al., 2015. *Estuarine Coastal and Shelf Science,* 167, 549-559.

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Modeling the Impact of Restoration Efforts on Phosphorus Loading and Transport through Everglades National Park, FL USA. Long, S.A., et al., 2015. *Science of the Total Environment,* 520, 81-95.

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Modeling Land-Based Nitrogen Loads from Groundwater-Dominated Agricultural Watersheds to Estuaries to Inform Nutrient Reduction Planning. Jiang, Y.F., et al., 2015. *Journal of Hydrology,* 529, 213-230.

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