

Water Quality Technology Conference and Exposition 2008

**Cincinnati, Ohio, USA
16-20 November 2008**

Volume 1 of 6

ISBN: 978-1-60560-993-5

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571
www.proceedings.com

Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2008) by American Water Works Association
All rights reserved.

Printed by Curran Associates, Inc. (2009)

For permission requests, please contact American Water Works Association
at the address below.

American Water Works Association
6666 W. Quincy Avenue
Denver, Colorado 80235

Phone: (303) 794-7711
Fax: (303) 347-0804

www.awwa.org

TABLE OF CONTENTS

Volume 1

Improved Standard Method 6040D: Isotope Dilution SPME/GC/ CI/MS/MS for Geosmin and MIB Analyses	1
<i>William E. Davis, Yongtao B. Li</i>	
Removal of MIB/Geosmin Using Granular Activated Carbon With and Without MIEX Pre-Treatment	3
<i>Mary Drikas, Mike Dixon, Jim Morran</i>	
Hybrid Process Combining PAC and Microfiltration for Taste and Odor Removal in Drinking Water Resources	27
<i>Ronan Treguer, Gayle Newcombe, Chibby Alloway, John Cigana, Herve Buisson</i>	
Determination of Haloacetic Acids, Bromate & Dalapon Using a Direct-Inject Ion Chromatography/Tandem Mass Spectrometry-Based Method	41
<i>Alan Zaffiro, Barry V. Pepich, David Munch</i>	
Impact of Spawning Salmon on Protein and Amino Acid Levels and DBP Formation Potential in an Arctic River	53
<i>Jon Menough, Virginia Johnson</i>	
DBP Formation Before and After Implementation of Membrane Filtration	70
<i>Kelly Bush, Pierre Berube, Sharon Brewer</i>	
Pipe Loop on Steroids! A New Approach to Monitoring Distribution System Water Quality	78
<i>Abigail F. Cantor</i>	
A Systematic Water Quality Enhancement Approach Using Distributed Rechlorination and Network Modeling	93
<i>John C.K. Chan, Laura B. Jacobsen, Mao Fang</i>	
Bench-Scale Testing for Controlling Desalinated Seawater Quality	119
<i>Tai Tseng, Robert Cheng, Cynthia Andrews-Tate, Kevin Wattier</i>	
Using Tracer Studies and Water Quality Analysis to Improve Water Quality by Better Hydraulic Management in Distribution Systems	149
<i>Francois-Julien Delisle, Genevieve Pelletier, Andreanne Simard, Manuel J. Rodriguez</i>	
100 Years of Chlorination: Dr. John L. Leal and the Jersey City Revolution	156
<i>Michael J. McGuire</i>	
Inactivation of USEPA Contaminant Candidate List Viruses Using Chlorine and Monochloramine	200
<i>Amy M. Kahler</i>	
Monochloramine Disinfection Kinetics of Nitrosomonas Europaea Using Propidium Monoazide Quantitative Real-Time PCR (PMA-qPCR)	226
<i>David G. Wahman, Karen Kleier, Jonathan G. Pressman</i>	
Preparing for the Expected - Developing a Scenario Planning Matrix and Operational Strategy for Challenging Operational Conditions	253
<i>Herbert B. Durbin, Laxman M. Devkota, Michelle D. DeHaan, Chad Seidel</i>	
Chemical Feed Optimization at the Three Rivers Water Filtration Plant, Fort Wayne, Indiana	271
<i>Alex A. Yavich, Chet V. Shastri, Victoria Zehr</i>	
Selecting Optimal Coagulant	277
<i>Alex A. Yavich</i>	
Hydraulic Improvement of the High Rate Sand Ballasted Clarifier: The Turbomix Technology	281
<i>Matthews Cotton, Alain Gadbois, Richard W. DiMassimo, Ashley Waples, Karim Essemiani</i>	

Alkalinity Addition Utilizing Carbon Dioxide & Lime: An Inexpensive Solution to a Historically Expensive Problem	289
<i>Vincent S. Hart</i>	
Solids Contact—Clarification: An Innovative Approach to a Seasoned Technology	296
<i>Vincent S. Hart, Kenny Seemater, Garry Turner</i>	
The Benefits and Challenges of Utilizing a Large-Scale Pilot Plant to Gather Design Information	300
<i>Jennifer L. Manuszak, Kirk O. Nowack, Laura Khoulivay</i>	
Relationships Between Turbidity, Particle Charge, Filterability, and NOM in Coagulation Process Control	311
<i>George C. Budd, Paul H. Hargette</i>	
Pellet Softening: Hardness, Iron and Manganese Removal	322
<i>Thomas Peters, Janet Snedecor</i>	
How to Decrease the Footprint of Ballasted Flocculation Stage?	340
<i>Celine Levecq, Gaetan Bourdages, Matthews Cotton, Philippe Sauvignet</i>	
"Best Value Product"- An Alternative Method for Selecting Polymers in Water Treatment Processes	351
<i>Yong Wang, Hanh Pham</i>	
Virus Inactivation by Silver Doped Titanium Dioxide Nanoparticles	368
<i>Michael V. Liga, Erika Bryant, Dong Li, Pedro Alvarez, Vicki Colvin, Qilin Li</i>	
The Challenge of Upgrading the Pittsburgh Water Treatment Plant Clearwell	379
<i>David J. Kozman, Chad Roby</i>	
Modified Flow Regime to Improve UV Effectiveness in Turbid Industrial Waters	399
<i>Denise Taylor</i>	
A Pilot-Scale Study on Ultraviolet Disinfection System for Drinking Water	403
<i>Wenjun Sun, Liu Wenjun</i>	
US Army Performance Verification of Individual Water Purifiers (NSF Protocol P248)	416
<i>Nikki Beetsch, Arthur H. Lundquist</i>	
AWWARF Study—High-Rate SFBW Treatment	417
<i>Richard A. Brown, David Cornwell, John Tobiason</i>	
Natural Organic Matter Removal in Coagulation-Sedimentation Processes With Backwash Water Recycle	424
<i>Avery Gottfried, Margaret E. Walsh</i>	
Three Birds With One Project: Enhanced Solids Processing, Stormwater Management, and Groundwater Recharge	431
<i>James R. DeWolfe, Jon Loveland, Greg Bazydola, Mark Strahota, Michael Sovich, Jim Johns, Steven Lang</i>	
Philadelphia's Use of Eclox for Water Contamination Response	451
<i>Jose Mathai, Gary A. Burlingame, Earl Peterkin</i>	
Application of TEVA-SPOT for Distribution System Water Quality Sensor Placement in the City of Avondale	466
<i>Brad Jeppson, Peng-Fei Chao, Steve Ruppenthal</i>	
Determination of Illicit Drugs in Water Supplies by Ultra Performance Liquid Chromatography Tandem Mass Spectrometry	485
<i>Francesc Ventura, Maria Huerta-Fontela, M. Rosa Boleda, M. Teresa Galceran</i>	
Development of a USEPA Drinking Water Method for the Analysis of Emerging Organic Contaminants by GC/MS	492
<i>Paul E. Grimmitt, Jean W. Munch</i>	

Development of a USEPA Method of the Analysis of Selected Drinking Water Contaminants by LC/MS/MS	503
<i>Jody Shoemaker, Brenda K. Boutin</i>	
Pilot and Demonstration-Scale Research Evaluation of Under-Ocean Floor Seawater Intake and Discharge	512
<i>Jason Allen, Tai Tseng, Robert C. Cheng, Kevin L. Wattier</i>	
Pilot Testing of Single Pass Perchlorate-Selective Ion Exchange Resins at Three Utilities in the Main San Gabriel Basin	532
<i>Caroline G. Russell, Gang Qin, Nicole Keon Blute, Michael J. McGuire, Carol Williams</i>	
Pilot-Scale Demonstration of Biological Reduction of Perchlorate and Nitrate from Ion Exchange Brine	560
<i>Mohammad Badruzzaman, Geno Lehman, Zakir Hirani, Debbie Roberts</i>	
Oxidation of Reduced Sulfur Specie (Thiosulfate) by Free Chlorine to Increase the Bed Life of Tailored GAC to Remove Perchlorate	573
<i>Judodine Patterson, Frederick S. Cannon, Robert Parette</i>	
Comparison Between Synthesized Lead Particles and Lead Solids Formed on Surfaces in Real Drinking Water Distribution Systems	587
<i>Mallikarjuna N. Nadagouda, Darren A. Lytle, Michael Schock</i>	
Impact of Water Chemistry on the Formation, Stabilization, and Dissolution Rates of Pb(IV) Oxides	596
<i>Yanjiao Xie, James D. Noel, Katherine Nelson, Daniel Giammar</i>	
The Influence of Water Chemistry on Dissolution Rates of Lead(II) Carbonate Solids Found in Water Distribution Systems	607
<i>James D. Noel, Daniel Giammar</i>	
A Simple Approach to Assessing Copper Pitting Corrosion Tendencies and Developing Control Strategies	618
<i>Daniel Williams, Darren Lytle, Colin White</i>	

Volume 2

UCMR2- Lessons Learned in Year One (The Good, the Bad, and the Ugly)	627
<i>Andrew D. Eaton, Linda Geddes</i>	
Is Monitoring for E. coli a Good Surrogate for <i>Cryptosporidium</i> Occurrence in Water?	663
<i>Eva C. Nieminski, Gary C. Durrant, Monica B. Hoyt, Ronald G. Kidd, Marie E. Owens, Leon Peterson, Scott Peterson, Windy Tanner, Jeffrey S. Rosen, Jennifer L. Clancy</i>	
<i>Cryptosporidium</i> Research and Genotyping Helps Avoid Boil Water Notice in Melbourne	682
<i>Melita Stevens, Aaron Jex, Christobel Ferguson, Daniel Deere, Paul T. Monis, Robin Gasser</i>	
Hydrazine - A New Analytical Approach and DBP Formation	691
<i>Ali Haghani, Andrew D. Eaton, Jim Wan, Yoon Young Cha</i>	
Analysis of the Formation of Formaldehyde in Wastewater During AOT Using On-Fiber Derivatization SPME GC/MS	708
<i>Rebecca Trenholm, Shane A. Snyder, Fernando L. Rosario-Ortiz</i>	
Development of Draft Method 524.3 for the Determination of Volatile Organic Compounds in Drinking Water	732
<i>Brahm Prakash, Barry Pepich, David Munch</i>	
Evaluation of Alternative Preservation Schemes for Synthetic Organics	744
<i>Andrew D. Eaton, Linda Geddes, Ali Haghani, Charles Grady</i>	
Trace Level Analysis of Pesticides Residue and Emerging Contaminants in Drinking Water Using the Aqua Analysis System	783
<i>Claude Mallet</i>	

Spectral Fluorescent Signatures Post-Processing by Principal Component Analysis Model for Determination of Organic Character and THM Formation Potential	785
<i>Ashish D. Borgaonkar, Taha F. Marhaba, Krit Punburananon</i>	
Implementing an Effective UV Advanced Oxidation Process	805
<i>Paul D. Swaim, Rory Morgan, Lee A. Foster, Paul A. Mueller, Mary Vorissis, William H. Carter</i>	
Evaluating UV Disinfection and Advanced Oxidation Processes for Cincinnati's Richard Miller Treatment Plant	816
<i>Christopher R. Schulz, David J. Opferman, Harold B. Wright, Marco Aieta, Jason A. Fleming, Deborah H. Metz, Ramesh D. Kashinkunti</i>	
Performance and Cost Modeling of Advanced Oxidation Using UV Light and Hydrogen Peroxide	833
<i>Harold B. Wright, Marco Aieta, Christopher R. Schulz, David J. Opferman Ramesh D. Kashinkunti, Jason A. Fleming, Deborah H. Metz</i>	
Quantification of the Hydroxyl Radical Scavenging Capacity During Advanced Oxidation Treatment	851
<i>Fernando L. Rosario-Ortiz, Stephen Mezyk, Devin Doud, Shane A. Snyder</i>	
UV Advanced Oxidation Process for Taste and Odor Treatment: Evaluation of Assimilable Organic Carbon Formation Potential at an Indiana WTP	877
<i>James Robert Collins, Christine A. Cotton, Bruce A. Heeke, David L. Dahl, Alan Royce</i>	
UV Photodecay of Inorganic Chloramines: Kinetics, Products and Mechanisms	888
<i>Jing Li, Ernest R. Blatchley III</i>	
Detecting Biological Agents in Drinking Water Using Culture- or Microscopic-Based and Molecular Methods	895
<i>Donna S. Francy, Rebecca N. Bushon, Frank W. Schaefer III, Alan Lindquist, Christopher M. Kephart, Amie M.G. Brady, Erin E. Bertke, Erin Stelzer, H. Lindquist, Christina Likirdopulos</i>	
Analysis of 911 Calls and Emergency Medical Service Logs as Part of a Contamination Warning System for Drinking Water	905
<i>Jessica Pulz, Katie Simon</i>	
An Analysis of Security Monitoring Data for Detection of Operational Problems	913
<i>Dan J. Kroll, Karl L. King</i>	
Data Integration and Event Detection at a Large Utility	927
<i>Justin Irving</i>	
Water Laboratory Alliance: WCIT and NEMI-CBR, Secure Databases for Laboratory Analysis During Incident Response	941
<i>Latisha Mapp, Anand Mudambi</i>	
Baseline Monitoring for Priority Contaminants at USEPA's First Water Security Initiative Pilot	951
<i>Elizabeth Hedrick, Jessica Pulz, John S. Chandler, Adrian Hanley, Niranjan Selar, Michael Tyree, Jeffrey W. Swertfeger</i>	
Extending Membrane Longevity by Using MIEX as a Pre-treatment	967
<i>Michael Dixon, Mary Drikas, Jim Morran</i>	
Fouling Control of Ultrafiltration Membrane Processes Using Biofiltration Pre-treatment	975
<i>Cynthia Halle, Sigrid Peldszus, Jens Haberkamp, Martin Jekel, Peter M. Huck</i>	
Effect of Polymer Flocculants on Microfiltration Flux Performance	985
<i>Sen Wang, Qilin Li, Charles Liu</i>	
Direct Membrane Filtration on Surface Water: Practical Insights to Fouling for Soft Surface Water	995
<i>Andrew L. Reid, Paul E. Cote, Robert Hankinson</i>	
Prevention of Membrane Biofouling by UV Irradiation	1015
<i>Cyril Marconnet, Malik Djafer, Gabriel Coriton, Patrick Di Martino, Veronique Heim</i>	

Use of Advanced NOM Characterization Methods to Trace the Fate of Organic Contaminants From a Membrane Backwash Recycle Scheme	1031
<i>Jesus Garcia-Aleman, Annika Bankston, Jeffrey Beaty, Roger Scharf, James Lozier, Gary Amy, Sergio Salinas</i>	
Effect of Stannous Chloride on Biofilm and Lead Corrosion Control	1040
<i>Ying Tan, Raymond M. Hozalski</i>	
Effect of Coagulant and Other Treatment Changes on Lead Leaching	1065
<i>Kendall Stone, Caroline Nguyen, Marc A. Edwards, Brandi Clark</i>	
The Impact of Hexametaphosphate on Copper Corrosion and Release	1110
<i>Alissa J. O'Donnell, Darren A. Lytle</i>	
Role of Phosphate in Mitigating Lead Release from Corrosion Products	1116
<i>Daniel Giammar, Katherine Nelson, James Noel</i>	
Impact of Water Chemistry on Synthetically Precipitated Copper Particles	1123
<i>Lisa Melton</i>	
Condition Assessment of Copper Pitting and Recommendations to Alleviate the Problem	1146
<i>Joseph Viciere, Bruce Weinstein, Solomon Abel</i>	
Current & Emerging Technologies for the Detection and Monitoring of Cyanobacteria Toxins: The Cyanotoxins	1163
<i>Wayne W. Carmichael</i>	
Evaluation and Exploitation of Microbes in the Elimination of Cyanotoxins From Water	1205
<i>Linda A. Lawton, Christine Edwards, Aakash Welgama, Pathmalal M. Manage, Douglas Graham</i>	
Removal of Microcystin-LR Using Membrane Processes	1227
<i>Harold W. Walker, Jungju Lee</i>	

Volume 3

Detecting Water Quality Changes in the Field: Lessons from Water Security Initiative	1259
<i>Matthew L. Magnuson, Scott Minamyer, Matthew Rees, Elizabeth Hedrick, Jeffrey W. Swertfeger, Michael Tyree</i>	
Operational Experience with Water Quality Anomaly Detection During the Cincinnati Water Security Initiative Pilot	1297
<i>Steven C. Allgeier, Katie Umberg, Yeongho Lee, Michael Tyree</i>	
Field Testing of a Semi-Automatic Ultrafiltration Device for the Concentration of Microorganisms in Large Volume Drinking Water Samples	1314
<i>Vincente Gallardo, H. Alan Lindquist</i>	
Inactivation of Bacterial Bio-threat Agents in Water	1337
<i>Laura J. Rose</i>	
Sensor Network Design for Drinking Water Distribution Systems to Help Maintain Water Quality	1376
<i>Robert J. Janke, Terra M. Baranowski, Regan E. Murray</i>	
Selected Membrane Research Topics: Ceramic Membranes, Organic (Matter) Fouling, Organic Micropollutant Rejection	1387
<i>Gary L. Amy</i>	
Drinking Water-Related Membrane Research at the University of Waterloo	1437
<i>Peter M. Huck</i>	
Selected Aspects of Microfiltration and Nanofiltration Related to Fabrication, Fouling, and Permselectivity	1445
<i>Shankararaman Chellam</i>	
Bacterial Source Tracking: What Can It Deliver?	1455
<i>George D. Di Giovanni</i>	

Microbial Source Tracking for Pathogenic Viruses	1503
<i>Jeanine D. Plummer, Jennifer S. Griffin</i>	
Pharmaceuticals and Personal Care Product Analysis (PPCP) as Part of an Integrated Anthropogenic Waste Indicator (AWI) Analysis Scheme	1508
<i>Curtis J. Hedman</i>	
The Spatial Variability of Disinfection By-products Relative to Regional Chemical Gradients	1515
<i>John M. Peckenham, Gail Lipfert, Andy Tolman, Touradj Solouki</i>	
Biological Filtration: The Concept and Application	1530
<i>N/A</i>	
Biological Filtration: The Concept and Application Concept of Biological Active Filtration	1531
<i>Eva Nieminski</i>	
Preliminary Results of a Survey on the Use of Biological Processes for Drinking Water Treatment	1534
<i>Patrick Evans, Eva Opitz, Phillippe Daniel, Chris Shultz, Amy Skerly, Shilpa Shivakumar</i>	
Treatment Plant Modifications to Improve Drinking Water Quality	1542
<i>Chuck Volk</i>	
Biologically Active Filtration: Beyond AOC Removal	1550
<i>Jess Brown</i>	
AwwaRF Related Research on Biological Filtration	1561
<i>John Albert</i>	
Conceptual Development of a Practically-Oriented Design Framework for Drinking Water Biofiltration	1567
<i>P.M. Huck, M.M. Sozanski</i>	
Source Water Protection on the Ohio River: Working Together to Protect Drinking Water	1574
<i>Jerry G. Schulte</i>	
Monitoring, Modeling and Emergent Toxicology in the East Fork Watershed: Developing a Test Bed for Water Quality Management	1579
<i>Christopher T. Nietch, Donald Brown</i>	
Potential Impacts of Climate Change on Water Quality Parameters Influencing Taste and Odor	1588
<i>Joseph A. Drago</i>	
Drought Related Taste and Odour Issues in Australian Source Waters	1594
<i>Gayle Newcombe, Lionel Ho, Michael D. Burch</i>	
The Effects of Flooding on Drinking Water Quality: Past and Possible Taste and Odor Problems	1639
<i>Roy D. Desrochers</i>	
Predicting Water Quality Changes From Future Watershed Development and Implications for Source Water Protection and Treatment	1658
<i>John P. Hudak</i>	
Total Coliform and E.coli Occurrence: Site Specific, But What Does a National Database Show?	1659
<i>Michael J. Messner, Jeffrey S. Rosen</i>	
Occurrence of Emerging DBPs in Wastewater or Algal Impacted Drinking Waters	1675
<i>Stuart W. Krasner, William Mitch, Paul Westrhoff, Aaron Dotson</i>	
Formation of Emerging DBPs from Organic Matter Isolates of Wastewater or Algal Origin	1686
<i>Aaron Dotson, Stuart W. Krasner, Paul Westerhoff</i>	
Bromine Incorporation in Regulated and Emerging DBPs and the Relative Predominance of Mono-, Di-, and Trihalogenated DBPs	1692
<i>Stuart W. Krasner, Thomas F. Speth, Chih-Fen Tiffany Lee, Russell Chinn, Richard J. Miltner, Jane Ellen Simmons, Stella Hartono, Howard S. Weinberg, Susan D. Richardson, Jonathan G. Pressman</i>	

DBPs and the LT2 ESWTR: Unintended Consequences and Simple Solutions	1709
<i>James R. Nugent, Thomas F. Clark, William C. Becker</i>	
Disinfection Byproduct Control Strategies for Consecutive Drinking Water Systems	1742
<i>Christopher C. Valenti, R. Scott Summers, Zaid K. Chowdhury, Michael J. Scimenti, Stuart W. Krasner, Christopher Hill, Ferdous Mahmood</i>	
Modelling Disinfection By-products Within Distribution System for Spatial Exposure Assessment	1755
<i>Christelle Legay, Manuel J. Rodriguez, Luis Miranda, Jean-Baptiste Serodes, Patrick J. Levallois,</i>	
Investigating PAC and GAC for Taste and Odor Control as Part of a 120-MGD Treatment Plant Design Project	1776
<i>Kirk O. Nowack, Laura Khouvilay</i>	
Evaluation of Alternative Taste and Odor Removal Technologies Through Bench Scale Testing for Full-Scale Application	1793
<i>Rebecca Slabaugh, Stephane Jousset, Laurie P. Sullivan, Richard A. Burch, David L. Dahl, Bruce A. Heeke</i>	
Modeling Off-Flavor Compounds Geosmin & 2-MIB in Quebec City and Lewis Water Sources Using Water Quality Parameters	1822
<i>Julien Parinet, Jean-Baptiste Serodes, Manuel J. Rodriguez-Pinzon</i>	
Modeling of Intrusion Volumes During Negative Pressure Events in a Full-scale Distribution System	1823
<i>Marie-Claude Besner, Gabrielle Ebacher, Bong Seog Jung, Jean Lavoie, Michele Prevost</i>	
Impact of Matrix Characteristics on Microorganism Survival Potential After Intrusion	1831
<i>Kala K. Fleming, Lindsey Conlow, Mark W. LeChevallier</i>	
Estimating Risk of Infection from Low-level Intrusion Events	1841
<i>Kala K. Fleming, Mark W. LeChevallier</i>	
Nitrification in a Simulated Domestic Plumbing System	1852
<i>Mohammad Rahman, Anne K. Camper</i>	
Chlorite Control of Nitrification: Phase III Demonstration Project, Glendale, California	1858
<i>Michael J. McGuire, Xueying Wu, Dan J. Askenaizer, Nicole Keon Blute</i>	

Volume 4

Bench-Scale Evaluation of Chlorine & Hydrogen Peroxide Reaction Kinetics for Operational Control at the Valley County Water District	1897
<i>Caroline G. Russell, Gang Qin, Michael J. McGuire, Nicole Keon Blute, Tom Mortenson</i>	
Moringa oleifera: A Natural Coagulant, Adsorbent and Filter Aid	1908
<i>Kebreab Ghebremichael, Eguse Gebremedhin, Tesfaye Gelagay, Gary L. Amy</i>	
Novel Coagulant for Improved Removal of Natural Organic Matter	1919
<i>Roger Molinder, Peter Jarvis, Simon Parsons, Bruce Jefferson</i>	
Developments in Dissolved Air Flotation	1926
<i>James K. Edzwald</i>	
Optimization of Flocculation for Direct Filtration Using Floc Size	1937
<i>Benoit Barbeau, Tyler E Ball</i>	
Curved Fluidic Structures to Improve Aggregation Kinetics in Municipal Water Treatment	1960
<i>Meng H. Lean, Ashutosh Kole, Norine Chang, Armin R. Volkel, Jeonggi Seo, H. Ben Hsieh</i>	
Removal of the Amino Acid Fraction of Dissolved Organic Nitrogen During Coagulation	1972
<i>Aaron Dotson, Paul K. Westerhoff</i>	
Treating Nitrate and Perchlorate the Natural Way Using Permeable Reactive Barriers	1978
<i>Samuel A.L. Perry</i>	

Combining Life Cycle Analyses and Groundwater Transport Modeling to Select an MTBE Treatment Technology	1989
<i>Marnie A. Bell, Venetia Barnes, Mark R. Lenz, Rebecca Slabaugh</i>	
A New Water Source: Can Fuel Cells Provide Safe and Cost-Effective Potable Water Sources?	2012
<i>Paul K. Westerhoff, Kiril Hristovski, Brindha Dhanasekaran, Juan Tibaquirá, Jonathan Posner</i>	
Aquifer Recharge of Treated Wastewater Through Wicks: An Innovative Discharge Method	2016
<i>Mark R. Owen, Peter T. Silbermann, Joseph M. Boccadoro, Andrew L. Reid</i>	
Wastewater-Impacted Drinking Water Sources: The Exception or the Rule?	2032
<i>Gary L. Amy, Stuart W. Krasner, Paul K. Westerhoff, Jorg E. Drewes, Martin Jekel, Jean-Philippe Croue</i>	
Singing Algae to Sleep: Understanding the Use of Ultrasound for Algal Control	2083
<i>Diane Purcell, Peter Jarvis, Bruce Jefferson, Simon Parsons</i>	
Modeling Transport of Selected Organic Trace Pollutants During Riverbank Filtration Conditions ..	2092
<i>Gretchen L. Oldham, Jorg E. Drewes, John McCray, Christiane Hoppe, Uwe Huebner, Rod Brauer</i>	
Great Lakes Raw Water Intake Expansion Investigation and Design Considerations Analysis	2097
<i>David Chen, Theping Chen, Samuel F. Jacob</i>	
An Alternative Statistical Procedure for Determination of Lowest Quantitation Levels for USEPA Drinking Water Methods	2105
<i>Stephen Winslow, John Carson, Michael Zimmerman, David Munch, Barry V. Pepich, John J. Martin</i>	
Differential Absorbance Spectroscopy in the Examination of Proton and Copper-binding Properties of Suwannee River Fulvic Acid	2113
<i>Deborah Dryer, Gregory V. Korshin</i>	
General and Site-Specific Case Studies of Compliance With the LT2ESWTR Regulatory Framework Under Varied Conditions	2120
<i>Brent Alspach, Dhananjay Mishra</i>	
Implementation of Low-Pressure Membrane Technology: Estimating Log-Removal Value (LRV) Uncertainty Using Monte Carlo Simulations	2144
<i>Robert P. Huehner, Brock A. Emerson</i>	
Surface Water Treatment Evaluation: Ceramic Membranes vs. Polymeric Membranes	2154
<i>Bhavana Karnik, Zaid K. Chowdhury</i>	
Organic Removal Utilizing Ceramic Microfiltration Membranes in Combination with Enhanced Coagulation and PAC Addition	2162
<i>Nathen Myers, Alan M. Pratt, Michael P. Lutz</i>	
Blended RO and Biological Filtration: A Novel Treatment Combination for Ammonia Removal and Copper Corrosion Control	2170
<i>Steven J. Quail</i>	
Hot Water Reverse Osmosis in Goodyear, Arizona	2190
<i>Robert E. Boysen, Kevin L. Alexander, Scott Lacy, Jerald A. Postema</i>	
Integrated Water Quality Modeling of a Wastewater Repurification Process	2202
<i>Regina Cassanova, Karla J. Kinser, Mark R. Graham</i>	
An Innovative Approach to Predicting Nitrogen Removal in Repurified Wastewater	2210
<i>Karla J. Kinser, Regina Cassanova, Joseph G. Jacangelo, Michael B. Nelson</i>	
Impact of Sequential and Preformed Chloramine Dosing on NDMA Formation in Repurified Wastewater	2222
<i>Mary Portillo Carr, Karla J. Kinser, Regina Cassanova, S. Lehman, J. Jacangelo</i>	
Producing High Quality Reclaimed Water: RO Permeate Stabilization Challenges	2230
<i>Jodie M. Nygaard, Jonathan P. Loveland, Amlan Ghosh, Michael Sarullo, Kenneth Lane</i>	
Organic Carbon in Distribution Systems: Implication for the Biostability of Reclaimed Water	2242
<i>Lauren A. Weinrich, Patrick K. Jjemba, Eugenio Giraldo, Mark LeChevalier</i>	

Trace Organics Contaminant Monitoring: Removal, Fate and Transport	2278
<i>Sean Poust, Zhi Zhou, Andrew Salveson, Jess C. Brown, Jose Lopez, Henry Breitenkam, Richard Cisterna, Enrique Vadiveldo</i>	
The Integration of Manganese Treatment: Case Studies Evaluating Source Control, Physiochemical Treatment and Preventing Dissolution in the Distribution System	2333
<i>Philip J. Brandhuber</i>	
Oxidant Selection for the Treatment of Manganese (II) Iron (II) and Arsenic (III) in Groundwaters	2334
<i>Johnathan F. Moor, Darren A. Lytle, Thomas J. Sorg</i>	
Molecular Testing of Water Samples: New Sample Preparation and Analytical Techniques for Improving Water Monitoring Efficacy	2339
<i>Vincent R. Hill</i>	
A Molecular Method to Distinguish Between Infectious and Non-infectious Viruses	2366
<i>Sandhya U. Parshionkar, Ian Laseke, Shay Fout</i>	
Molecular Diversity of Drinking Water Bacterial Communities Using 16S rRNA Gene Sequence Analyses	2368
<i>Jorge W. Santo Domingo, Randy Revetta, Ben Humrighouse, Regina Lamendella, Daniel B. Oerther</i>	
Development of "Bioball™" as Internal Control for Detection of Helicobacter Pylori by Quantitative PCR	2370
<i>Keya Sen</i>	
Molecular Genotyping of Viable <i>Cryptosporidium</i> Oocysts	2402
<i>Cristin C. Brescia, Shannon M. Hunt, Michael W. Ware, Andrey I. Egorov, Eric Villegas</i>	
Getting Better Microbial Data: Strategies to Quantify and Reduce Uncertainty	2404
<i>Philip J. Schmidt, Monica B. Emelko, Mary E. Thompson</i>	
Evaluation of Two PCR-based Swine-specific Fecal Source Tracking Assays	2405
<i>Regina Lamendella, Daniel B. Oerther, George D. Di Giovanni, Jorge W. Santo-Domingo, A. Yannarell</i>	
Validation of a Large Volume Most-Probable-Number Technique for USEPA Method 1601: Coliphage by a Two-step Enrichment Procedure	2407
<i>Richard E. Danielson, J. Truscott, T. Adams, R. Staggs, S. Hogg</i>	
Isolation and Characterization of a Heterotrophic Nitrifying Bacterium from a Reactor that Simulates Premise Plumbing	2413
<i>Anne K. Camper, G. Encarnacion, L. Leach, M. Rahman, B. Hisey</i>	
Coliplage® - An Alternative Method for the Real Time Monitoring of E. coli Numbers in Bathing Waters	2420
<i>Annabelle Henry, Julia Baudart, Guillaume Scherpereel, Pierre Servais, Philippe Lebaron, Chibby Alloway, Karim Essemiani, Karine Delabre</i>	
Growth Potential for Mycobacterium avium ssp. avium In a Drinking Water Distribution System Environment	2425
<i>Andrew Jacque, Gregory W. Harrington, Michael T. Collins</i>	
Methods for Preparation of High-titer Purified Bacteriophage Suspensions for Use in Environmental Experiments	2427
<i>Maria Mesquita, Jesse R. Stimson, Gitak T. Chae, Kathleen A. Higgins, Carol Ptacek, David W. Blowes</i>	
LT2 Laboratory Demonstration of Improved Method 1623 Recovery and Better Microscopic Detection of <i>Cryptosporidium</i> Oocysts	2429
<i>Nancy J. Shaw, Leah Villegas, Michael Zimmerman, Patricia Klonicki, Carrie Miller</i>	
Temporal Behavior of Post-Filter GAC Adsorbers During THM Formation and Precursor Removal	2435
<i>Sidney Filho, Ricardo Mendes, Claudia Santos, Carolina deSouza, Frederico deAlmeida</i>	

Innovative GAC Application for Stage 2 Compliance	2456
<i>Andrea Traviglia, Kirk O. Nowack, Connie K. Schreppel, Philip A. Tangorra</i>	
Making GAC More Affordable to the City of Phoenix: A Roadmap to Stage 2 DBP Rule Compliance	2482
<i>Amlan Ghosh, Zaid K. Chowdhury, Laurel Passantino, Mary Reker, Vance G. Lee</i>	
Powdered Activated Carbon and Natural Organic Matter Removal: What Is the Best Dosing Procedure?	2494
<i>Stuart Carroll, Peter Jarvis, Jenny Banks, Bruce Jefferson</i>	
Characterizing Activated Carbon for Drinking Water Treatment	2504
<i>Xiaodan Zhang, Ronald Hofmann</i>	

Volume 5

Localized Treatment of Disinfection By-products	2523
<i>Bruce A. Johnson, Joseph C. Lin, David J. Rexing, Mao Fang, John C.K. Chan, Laura B. Jacobsen,</i>	
Development of Optimization Criteria for Distribution System Operations	2562
<i>Mark W. LeChevallier, Melinda J. Friedman, Jan C. Routt</i>	
Identification of Heterotrophic Bacteria That Colonize Pilot- and Full-Scale Chloraminated Distribution Systems	2577
<i>Safak Yilmaz, Ramesh Goel, Gregory Harrington, Daniel Noguera</i>	
Evaluation of the Impacts of Corrosion Inhibitors on Bulk and Biofilm Heterotrophic Bacteria	2597
<i>Bingjie Zhao, Andrew Amis Randall, James Taylor</i>	
Impact of the Distribution System on Major Nutrients: Behavior of C, N, P, Si, and S	2614
<i>Windsor Sung</i>	
Study on Monochloramine Penetration in Drinking Water Biofilms Using Microelectrode Technique	2631
<i>Richard Lu, Tong Yu, Daniel W. Smith</i>	
Monochloramine Microelectrode for In-Situ Application Within Chloraminated Distribution System Biofilm	2633
<i>Woo Hyoung Lee, Jonathan G. Pressman, David G. Wahman, Paul L. Bishop</i>	
Evaluation of UV System Design Using a Validated Lifecycle Cost Model	2639
<i>Bryan R. Townsend, Robert A. Hulsey, Jeff J. Neemann</i>	
Costs and Sustainability Comparison of Chemical Disinfection and Chlorine and Medium Pressure Ultraviolet Disinfection for Virus Inactivation	2656
<i>James Robert Collins, Christine A. Cotton, Phyllis B. Posy</i>	
Important Factors for Computational Modeling of UV Disinfection Systems	2676
<i>Clifford K. Ho, Siri S. Khalsa, Ed Wicklein, Harold B. Wright</i>	
Pilot-Scale Fouling Study Using MP and LPHO UV Systems	2692
<i>A. Cristina Fonseca, Inder Singh, Isaac W. Wait</i>	
Evaluation of UV Fouling for the San Francisco Public Utilities Commission (SFPUC) Hetch Hetchy Supply	2718
<i>Mark Heath, Harold B. Wright, Daniel H. Kim, George Leung, Keyvan Moghbel, Enio G. Sebastiani, Steven Wen</i>	
Evaluation of UV Lamp Breakage and Mercury Release	2738
<i>Mark Heath, Corianne Hart, Harold B. Wright, Nicki Pozos, Marcia Schmelzer, Janet Finegan-Kelly, Paul Miller</i>	
Chemical Treatment for Arsenic Removal from Full-Scale High-Pressure Membrane Concentrates	2747
<i>Kenneth L. Mercer, John E. Tobiason</i>	

Damage Control: Managing the Residuals Generated During Arsenic Treatment	2762
<i>Jacqueline Shaw, Lauren Pepe, Wendell P. Ela, Eduardo Saez</i>	
Pioneers of Full-Scale Arsenic Treatment: Optimization Strategies Every Impacted System Should Consider	2769
<i>Michelle D. De Haan, Laura Fritsky, Paul Taylor, Stephen Acquafredda, Herb Durbin</i>	
Subsurface Iron Removal for Drinking Water Production: Understanding the Process and Exploiting Beneficial Side Effects	2802
<i>Doris van Halem, Weren deVet, G. Amy, J. vanDijk</i>	
Manganese Sequestration in Potable Water: A Quantitative Evaluation	2814
<i>Michael D. Britton, Glen R. Boyd, Andrew S. Hill, Alexander A. Vetrovs, Steve H. Reiber, Gregory P. Keith</i>	
Iron Coatings in Pilot Dry Groundwater Biofilters	2834
<i>Weren de Vet, Luuk C. Rietveld, M.C.M. van Loosdrecht</i>	
Changes in Water Quality in Premise Plumbing: Cold Water vs Hot Water	2843
<i>Adam Eyring, Francine St. Denis, Gary A. Burlingame</i>	
Indirect Economic Impacts in Water Supplies Augmented With Desalinated Water	2858
<i>Martin Rygaard, Erik Arvin, Philip J. Binning</i>	
"What is the Quality of My Water?" Answering the Public When Multiple Sources are Involved	2862
<i>James D. Maher, Jerry A. Edwards, Thomas R. Nevins, Douglas DeMaster</i>	
Using Triple Bottom Line to Make Water Quality Decisions: Tucson Water's Experience	2864
<i>Christine A. Cotton, Jeff B. Biggs, James Robert Collins, Katie Arnold, George Maseeh</i>	
Evaluations of Effectiveness of Water Conservation During the Drought and Its Impacts on Water Quality in Distribution Systems	2901
<i>Z. Michael Wang, Wayne Zhang, Dale Crisp, Larry McMillan</i>	
Case Study of Microbial Growth in New Buildings With Water Conservation Features	2914
<i>Caroline Nguyen, Marc A. Edwards, Francis A. DiGiano, Carolyn Elfland</i>	
Computational Fluid Dynamics Modeling of UV Reactor Validation Tests	2940
<i>Ed Wicklein, Harold B. Wright, Clifford K. Ho</i>	
Measuring Dose Distribution by Lagrangian Actinometry: A New Protocol for UV Reactor Validation	2956
<i>O. Karl Scheible, Chengyue Shen, Eric M. Cox, Ernest R. Blatchley III</i>	
Coliphage T1 as a Bioassay Surrogate for <i>Cryptosporidium</i> in Validations of UV Reactors for Drinking Water and Wastewater	2960
<i>Thomas M. Hargy, Oliver Lawal, Ronnie Bemus, Bryan R. Townsend, Jose A.H. Sobrinho</i>	
DNA Damage Assessment in UV-treated Adenoviruses	2968
<i>Anne Catharine Eischeid, Joel N. Meyer, Karl G. Linden</i>	
Assessing UV Inactivation of Enteric Adenovirus Using Real-Time Quantitative PCR	2976
<i>Ning Ding, Stephen A. Craik, Xiaoli Pang, Bonita Lee, Norman F. Neumann</i>	
UV Reactor Challenges With a High Resistance Surrogate for Adenovirus Credit	2983
<i>Brian Petri, Conrad Odegaard</i>	
Occurrence and Source of Pharmaceutical Compounds, Personal Care Products (PPCPs) and Endocrine Disrupting Substances (EDC) in Drinking Water Sources	2987
<i>Khadija Aboulfadl, Michele Prevost, Atlasi Deneshvar, Liza Viglino, Sebastien Sauve</i>	
Occurrence of Cyanobacteria and their Associated Toxins in Water Resources of Water Treatment Facilities in Southern Quebec	3017
<i>Arash Zamyadi, Michele Prevost, Mike Burch, Peter Baker, David Bird, Thorsten Mosisch</i>	
Monitoring Algal Toxins in French Freshwaters: What are the Most Relevant Toxins and the Best Analytical Methods?	3044
<i>Auguste Bruchet, Isabelle Baudin, Marie Laure Janex-Babibi, Maria Huerta, Francesc Ventura</i>	

Effect of Oxidation of Dissolved Organic Matter on Micropollutant Adsorption by Granular Activated Carbon	3054
<i>Christopher J. Corwin, Austa Marie Parker, R. Scott Summers</i>	
Removal of Selected EDCs and PhACs from Drinking Water by a Powdered Activated Carbon/Ultrafiltration System	3063
<i>Monique Waller, Robert C. Andrews</i>	
Performance Assessment of Advanced Water Treatment Processes for the Removal of Unregulated Trace Organic Chemicals	3069
<i>Jorg E. Drewes, Eric Dickenson, David L. Sedlak, Shane A. Snyder</i>	
Controlling Manganese in the Surface Water Treatment Plant Operations	3074
<i>Yong Wang</i>	

Volume 6

Methods to Improve RO Recovery: Ion Exchange and Pre-treatment for Barium Reduction	3106
<i>Christine A. Cotton, Jeff B. Biggs, Kristen Amante, James Robert Collins, Kevin L. Alexander</i>	
Minimizing Chlorite (and TTHM) Formation by Optimizing Cl₂ and ClO₂ Doses	3138
<i>Bradley A. Zachman, Pamela K. Benskin, Kevin Linder, Kirk Watson</i>	
Removal of Bromide and Natural Organic Matter by Anion Exchange	3168
<i>Susan Hsu, Philip C. Singer</i>	
Removal of Bromate from Drinking Water by Granular Ferric Hydroxide (GFH)	3185
<i>Yanghun Choi, Eva Kumar, Amit Bhatnagar, Woosik Jung, Byong-Hun Jeon, Joon-Wun Kang</i>	
Presystemic Metabolism and Detoxification of Bromate after Ingestion: AWWARF 4042 Progress Report	3192
<i>Joseph A. Cotruvo, Richard J. Bull, Choon Nam Ong, Shane A. Snyder, Oscar Quinones, Gilbert Gordon, Gilbert E. Pacey, Brian Cummings, Jeffrey Fisher</i>	
USEPA Guidance Document for Microbiological Methods Validation	3211
<i>Sandhya U. Parshionkar</i>	
Field Evaluation of a High Volume Sampling Method for Total Coliform and E. coli	3232
<i>Thomas M. Hargy, Jeffrey S. Rosen, Jose A.H. Sobrinho, Mark W. LeChevallier, Melinda J. Friedman</i>	
The Sensitivity and Specificity of All Methods Approved by USEPA for the Detection of Coliforms and E.coli in Drinking Water	3246
<i>Colin R. Fricker, Monique DeSarno, Bradley J. Eldred, Paul S. Warden</i>	
Pathogen Transport in Porous Media: The Role of Experimental Design, Ionic Strength and NOM	3248
<i>Kathleen A. Higgins, Monica B. Emelko</i>	
Characterization of Amoebae and Intra-amoebal Bacteria in Drinking Water, and Identification of Control Strategies	3265
<i>Jean Francois Loret, Samuel Robert, Gemma Saucedo, Vincente Catalan, Daniele Corsaro, Gilbert Greub</i>	
Protection of E. coli Bacteria and B. Subtilis Spores Ingested by Nematode C. elegans Against UV Disinfection	3275
<i>Francoise Bichai, Benoit Barbeau, Pierre Payment</i>	
Biodegradation in Rapid Sand Filtration	3301
<i>Hsin-Hsin Tung, Yi-Hsueh Chuang, Hui-Hsien Chang, Gen-Shuh Wang</i>	
Factors Affecting Manganese Removal During Biofiltration: A Full-scale and Bench-scale Analysis	3307
<i>Mark Burger, Graham A. Gagnon, Corinne Krentz</i>	
Bang for the Buck: Optimizing Coagulation and GAC for TOC Removal	3316
<i>Chad J. Seidel, Stephen Acquafredda, Binga Talabi, George Tang, Jeanne Jensen, Abel Ramarui</i>	

Comparison of Garnet Bead Media Filtration and Multimedia Filtration for Turbidity and Microbial Pathogen Removal	3346
<i>Craig Patterson, Roy C. Haught, Rajib Sinha, Nur Muhammad, Radha Krishnan, David Bromley</i>	
Decontamination of Filtration Media for Controlling Release of Organisms	3360
<i>Isabelle Baudin, Claire Marchand, Michel Jousset, Catherine Debeaupuis, Karl Glucina, Constance Schlumber, Jektyerina Dorko, Laszlo Debreczeny</i>	
Regenerating Spent Zeolites with UV and UV/H₂O₂ to Enhance Removal of Endocrine Disrupting Compounds	3376
<i>Erik J. Rosenfeldt, Safina Singh</i>	
How Design Translates Into Real World Results	3388
<i>Denise R. Funk, Laurie A. Gilmore, Jay Jones</i>	
Comparison of Bromate Control Strategies: pH Suppression vs. Chloramine Addition	3400
<i>Susan M. Teefy, Cristina Pena, Beth L. Gentry, Issam N. Najm, Alexander A. Mofidi</i>	
Algal Characterization and Control Strategies in Water Treatment Plants	3411
<i>Bhavana Karnik, Kristen Amante, Sunil N. Kommineni</i>	
Short-Term Variations in DBP Concentrations at the Point of Entry to the Distribution System	3417
<i>Alexa Obolensky, Philip C. Singer, Vanessa L. Speight</i>	
Simultaneous Control of Mn, Fe, and DBPs for a Chlorinated Groundwater Source	3432
<i>John E. Tobiasson, Jill Russell, Anjuman A. Islam, Gary S. Kaminski</i>	
Drinking Water Treatability Implications of Severe Wildfire	3439
<i>Monica B. Emelko, Uldis Silins, Kevin D. Bladon, Michael Stone</i>	
Oxidation of Pharmaceutically-Active Compounds (PhACs) During Water Treatment with Potassium Permanganate	3451
<i>Lanhua Hu, Timothy J. Strathmann, Heather M. Martin, Matthew N. Sugihara, Kelly A. Keating</i>	
Ozone Oxidation of Pharmaceuticals, Pesticides and Endocrine Disruptors During Drinking Water Treatment	3461
<i>Romain Broseus, Michele Prevost, Khadija Aboufadel, Araceli Garcia Ac, Atlasi Daneshvar, Sebastien Sauve</i>	
Treatment of Emerging Pathogens and Micropollutants With Potassium Ferrate(VI)	3485
<i>Lanhua Hu, Timothy J. Strathmann, Martin A. Page, Benito J. Marinas, Joanna Shisler</i>	
Advanced Oxidation and Artificial Recharge: A Synergistic Hybrid System for Removal of Organic Micropollutants	3493
<i>Karin Teunissen, Jasper Verberk, Gary L. Amy, Johann C. van Dijk, H. Jonge</i>	
Elimination of β-lactam antibiotics by UV Irradiation and the Consequential Changes in Antibacterial Activity	3511
<i>Yeonjung Jung, Joon-Wun Kang, Wan Gi Kim, Ko Woon Baek, Yun Young Hwang, Yeo Joon Yoon, Byung Soo</i>	
Antibiotics in Slow-rate Biofiltration Processes: Biosorption, Kinetics and Equilibrium	3524
<i>David B. Wunder, Valerie A. Horstman, Raymond M. Hozalski</i>	
Colloidal Mobilization of Lead by Chlorine in Drinking Water Distribution System	3538
<i>Haizhou Liu, Gregory V. Korshin, John F. Ferguson</i>	
Morphological Analysis and Solubility of Lead Particles: Effect of Phosphates and Implications to Drinking Water Distribution	3549
<i>Colin White, Darren A. Lytle</i>	
Kinetics of Lead Release from Brass Water Meters and Faucets	3569
<i>J. Barry Maynard, David Mast, Pierre K. Kwan</i>	
Managing and Resolving Lead Problems in Potable Water of New Construction	3589
<i>Carolyn Elfland, Marc A. Edwards</i>	

Occurrence and Source of Particulate Lead in Tap Water	3606
<i>Elise E.D. Deshommès, Shokoufeh Nour, Michele Prevost, Laurent Laroche</i>	
Contribution of Lead Sources to Lead Levels at the Tap	3638
<i>Anne M. Sandvig, Gregory J. Kirmeyer</i>	
Contribution to the Optimization of the Detection of Infectious <i>Cryptosporidium</i> by 3D CC-IFA	3650
<i>Cindy Lalancette, George D. Di Giovanni, Michele Prevost, Normand Labbe</i>	
<i>Cryptosporidium</i> Off-The-Slide Genotyping: Recovery of Oocysts Extracted from Slides Examined by Method 1623	3686
<i>Michael W. Ware, Eric N. Villegas</i>	
Development and Performance Evaluation of a <i>Cryptosporidium parvum</i> and <i>Cryptosporidium hominis</i> Specific Real-Time PCR Assays	3688
<i>Eric N. Villegas, Peter Husby, Reena Mackwan, Michael W. Ware, Stephanie I. Harris, Erin Beckman, Richard A. Haugland, Lihua Xiao, James Ferretti, Marie O'Shea, Barry Weichman, Abu Sayed, Ronald Landy</i>	
Sensitivity Analysis of the QMRA Model Developed for Evaluating the Relative Risk of Infection by <i>Cryptosporidium</i> and <i>Giardia</i> in Drinking Water	3691
<i>Kenza Jaidi, Michele Prevost, Benoit Barbeau</i>	
The Risk of <i>Cryptosporidiosis</i> from Drinking Water	3714
<i>Anne Johnson, George D. Di Giovanni, Paul A. Rochelle</i>	
Identifying Mechanisms Associated with Spatial & Temporal Variation in <i>Cryptosporidium</i> Occurrence in the South Nation River Basin	3724
<i>Norma J. Ruecker, Graham Wilkes, David Lapen, Ed Topp, Thomas Edge, Norman F. Neumann</i>	

Author Index