

ENVIRONMENTAL Science & Technology



June 16, 2015
Volume 49
Number 12
pubs.acs.org/est

Rethinking Biodegradation in Aquifers



ACS Publications
Most Trusted. Most Cited. Most Read.

www.acs.org

June 16, 2015: Vol. 49, Iss. 12

Content

1. Biodegradation: Updating the Concepts of Control for Microbial Cleanup in Contaminated Aquifers

Rainer U. Meckenstock, Martin Elsner, Christian Griebler, Tillmann Lueders, Christine Stumpp, Jens Aamand, Spiros N. Agathos, Hans-Jørgen Albrechtsen, Leen Bastiaens, Poul L. Bjerg, Nico Boon, Winnie Dejonghe, Wei E. Huang, Susanne I. Schmidt, Erik Smolders, Sebastian R. Sørensen, Dirk Springael, and Boris M. van Breukelen

Environmental Science & Technology 2015 49 (12), 7073-7081

DOI: 10.1021/acs.est.5b00715

2. Spatial and Temporal Patterns of Stranded Intertidal Marine Debris: Is There a Picture of Global Change?

Mark Anthony Browne, M. Gee Chapman, Richard C. Thompson, Linda A. Amaral Zettler, Jenna Jambeck, and Nicholas J. Mallos

Environmental Science & Technology 2015 49 (12), 7082-7094

DOI: 10.1021/es5060572

3. "Control-Alt-Delete": Rebooting Solutions for the E-Waste Problem

Jinhui Li, Xianlai Zeng, Mengjun Chen, Oladele A. Ogunseitan, and Ab Stevles

Environmental Science & Technology 2015 49 (12), 7095-7108

DOI: 10.1021/acs.est.5b00449

4. Metal-Based Nanotoxicity and Detoxification Pathways in Higher Plants

Chuanxin Ma, Jason C. White, Om Parkash Dhankher, and Baoshan Xing

Environmental Science & Technology 2015 49 (12), 7109-7122

DOI: 10.1021/acs.est.5b00685

5. Comparison of Life Cycle Greenhouse Gases from Natural Gas Pathways for Medium and Heavy-Duty Vehicles

Fan Tong, Paulina Jaramillo, and Inês M. L. Azevedo

Environmental Science & Technology 2015 49 (12), 7123-7133

DOI: 10.1021/es5052759

6. Cultured Construction: Global Evidence of the Impact of National Values on Sanitation Infrastructure Choice

Jessica A. Kaminsky

Environmental Science & Technology 2015 49 (12), 7134-7141

DOI: 10.1021/acs.est.5b01039

7. Evaluation of Molecular- and Culture-Dependent MST Markers To Detect Fecal Contamination and Indicate Viral Presence in Good Quality Groundwater

D. Diston, M. Sinreich, S. Zimmermann, A. Baumgartner, and R. Felleisen

Environmental Science & Technology 2015 49 (12), 7142-7151

DOI: 10.1021/acs.est.5b00515

8. Community Structure and Soil pH Determine Chemoautotrophic Carbon Dioxide Fixation in Drained Paddy Soils

Xi-En Long, Huaiying Yao, Juan Wang, Ying Huang, Brajesh K. Singh, and Yong-Guan Zhu

Environmental Science & Technology 2015 49 (12), 7152-7160

DOI: 10.1021/acs.est.5b00506

9. Dynamics of Suspended and Attached Aerobic Toluene Degraders in Small-Scale Flow-through Sediment Systems under Growth and Starvation Conditions

Adrian Mellage, Dominik Eckert, Michael Grösbacher, Ayse Z. Inan, Olaf A. Cirpka, and Christian Griebler

Environmental Science & Technology 2015 49 (12), 7161-7169

DOI: 10.1021/es5058538

10. Comparison of Daytime and Nighttime New Particle Growth at the HKUST Supersite in Hong Kong

Hanyang Man, Yujiao Zhu, Fei Ji, Xiaohong Yao, Ngai Ting Lau, Yongjie Li, Berto P. Lee, and Chak K. Chan

Environmental Science & Technology 2015 49 (12), 7170-7178

DOI: 10.1021/acs.est.5b02143

11. The Impact of Particle Size, Relative Humidity, and Sulfur Dioxide on Iron Solubility in Simulated Atmospheric Marine Aerosols

Benton T. Cartledge, Aurelie R. Marcotte, Pierre Herckes, Ariel D. Anbar, and Brian J. Majestic

Environmental Science & Technology 2015 49 (12), 7179-7187

DOI: 10.1021/acs.est.5b02452

12. Mercury Deposition and Re-emission Pathways in Boreal Forest Soils Investigated with Hg Isotope Signatures

Martin Jiskra, Jan G. Wiederhold, Ulf Skjellberg, Rose-Marie Kronberg, Irka Hajdas, and Ruben Kretzschmar

Environmental Science & Technology 2015 49 (12), 7188-7196

DOI: 10.1021/acs.est.5b00742

13. Effects of Increasing Nitrogen and Phosphorus Concentrations on Phytoplankton Community Growth and Toxicity During *Planktothrix* Blooms in Sandusky Bay, Lake Erie

Timothy W. Davis, George S. Bullerjahn, Taylor Tuttle, Robert Michael McKay, and Susan B. Watson

Environmental Science & Technology 2015 49 (12), 7197-7207

DOI: 10.1021/acs.est.5b00799

14. Capillary Pressure–Saturation Relations for Supercritical CO₂ and Brine in Limestone/Dolomite Sands: Implications for Geologic Carbon Sequestration in Carbonate Reservoirs

Shibo Wang and Tetsu K. Tokunaga

Environmental Science & Technology 2015 49 (12), 7208-7217

DOI: 10.1021/acs.est.5b00826

15. Ubiquitous Occurrence of Chlorinated Byproducts of Bisphenol A and Nonylphenol in Bleached Food Contacting Papers and Their Implications for Human Exposure

Yuyin Zhou, Mo Chen, Fanrong Zhao, Di Mu, Zhaobin Zhang, and Jianying Hu

Environmental Science & Technology 2015 49 (12), 7218-7226

DOI: 10.1021/acs.est.5b00831

16. Microbial Dechlorination of Polychlorinated Biphenyls, Dibenz-p-dioxins, and -furans at the Portland Harbor Superfund Site, Oregon, USA

Lisa A. Rodenburg, Valdis Krumins, and Joanna Crowe Curran

Environmental Science & Technology 2015 49 (12), 7227-7235

DOI: 10.1021/acs.est.5b01092

17. Synergistic Effect of Reductive and Ligand-Promoted Dissolution of Goethite

Zimeng Wang, Walter D. C. Schenkeveld, Stephan M. Kraemer, and Daniel E. Giamar

Environmental Science & Technology 2015 49 (12), 7236-7244

DOI: 10.1021/acs.est.5b01191

18. Consequence of Climate Mitigation on the Risk of Hunger

Tomoko Hasegawa, Shinichiro Fujimori, Yonghee Shin, Akemi Tanaka, Kiyoshi Takahashi, and Toshihiko Masui

Environmental Science & Technology 2015 49 (12), 7245-7253

DOI: 10.1021/es5051748

19. Ecological Network Analysis for Carbon Metabolism of Eco-industrial Parks: A Case Study of a Typical Eco-industrial Park in Beijing

Yi Lu, Bin Chen, Kuishuang Feng, and Klaus Hubacek

Environmental Science & Technology 2015 49 (12), 7254-7264

DOI: 10.1021/es5056758

20. Nondeterministic Computational Fluid Dynamics Modeling of Escherichia coli Inactivation by Peracetic Acid in Municipal Wastewater Contact Tanks

Domenico Santoro, Ferdinando Crapulli, Mehrdad Raisee, Giuseppe Raspa, and Charles N. Haas

Environmental Science & Technology 2015 49 (12), 7265-7275

DOI: 10.1021/es5059742

21. High-Resolution Mapping of Sources Contributing to Urban Air Pollution Using Adjoint Sensitivity Analysis: Benzene and Diesel Black Carbon

Lucas A. J. Bastien, Brian C. McDonald, Nancy J. Brown, and Robert A. Harley

Environmental Science & Technology 2015 49 (12), 7276-7284

DOI: 10.1021/acs.est.5b00686

22. Stream Dynamics and Chemical Transformations Control the Environmental Fate of Silver and Zinc Oxide Nanoparticles in a Watershed-Scale Model

Amy L. Dale, Gregory V. Lowry, and Elizabeth A. Casman

Environmental Science & Technology 2015 49 (12), 7285-7293

DOI: 10.1021/acs.est.5b01205

23. Use of Otolith for Detecting Strontium-90 in Fish from the Harbor of Fukushima Dai-ichi Nuclear Power Plant

Ken Fujimoto, Shizuko Miki, Hideki Kaeriyama, Yuya Shigenobu, Kaori Takagi, Daisuke Ambe,

Tsuneo Ono, Tomoko Watanabe, Kenji Morinaga, Kaoru Nakata, and Takami Morita

Environmental Science & Technology 2015 49 (12), 7294-7301

DOI: 10.1021/es5051315

24. Characterization of Polymeric Nanomaterials Using Analytical Ultracentrifugation

Leosvea Diaz, Caroline Peyrot, and Kevin J. Wilkinson

Environmental Science & Technology 2015 49 (12), 7302-7309

DOI: 10.1021/acs.est.5b00243

25. Quantitative 3D Shape Description of Dust Particles from Treated Seeds by Means of X-ray Micro-CT

Wouter Devarrewaere, Dieter Foqué, Udo Heimbach, Dennis Cantre, Bart Nicolai, David Nuytten, and Pieter Verboven

Environmental Science & Technology 2015 49 (12), 7310-7318

DOI: 10.1021/acs.est.5b02250

26. A Novel Microbial Source Tracking Microarray for Pathogen Detection and Fecal Source Identification in Environmental Systems

Xiang Li, Valerie J. Harwood, Bina Nayak, Christopher Staley, Michael J. Sadowsky, and Jennifer Weidhaas

Environmental Science & Technology 2015 49 (12), 7319-7329

DOI: 10.1021/acs.est.5b00980

27. Production of Sulfate Radical and Hydroxyl Radical by Reaction of Ozone with Peroxymonosulfate: A Novel Advanced Oxidation Process

Yi Yang, Jin Jiang, Xinglin Lu, Jun Ma, and Yongze Liu

Environmental Science & Technology 2015 49 (12), 7330-7339

DOI: 10.1021/es506362e

28. Long-Term in Situ Oxidation of Biogenic Uraninite in an Alluvial Aquifer: Impact of Dissolved Oxygen and Calcium

Juan S. Lezama-Pacheco, José M. Cerrato, Harish Veeramani, Daniel S. Alessi, Elena Suvorova, Rizlan Bernier-Latmani, Daniel E. Giammar, Philip E. Long, Kenneth H. Williams, and John R. Bargar

29. Effect of Cyanuric Acid on the Inactivation of Cryptosporidium parvum under Hyperchlorination Conditions

Jennifer L. Murphy, Michael J. Arrowood, Xin Lu, Michele C. Hlavsa, Michael J. Beach, and Vincent R. Hill

Environmental Science & Technology 2015 49 (12), 7348-7355
DOI: 10.1021/acs.est.5b00962

30. Antibiotic Resistome and Its Association with Bacterial Communities during Sewage Sludge Composting

Jian-Qiang Su, Bei Wei, Wei-Ying Ou-Yang, Fu-Yi Huang, Yi Zhao, Hui-Juan Xu, and Yong-Guan Zhu
Environmental Science & Technology 2015 49 (12), 7356-7363
DOI: 10.1021/acs.est.5b01012

31. Sulfonated Graphene Nanosheets as a Superb Adsorbent for Various Environmental Pollutants in Water

Yi Shen and Baoliang Chen
Environmental Science & Technology 2015 49 (12), 7364-7372
DOI: 10.1021/acs.est.5b01057

32. SCR Atmosphere Induced Reduction of Oxidized Mercury over CuO-CeO₂/TiO₂ Catalyst

Hailong Li, Shaokang Wu, Chang-Yu Wu, Jun Wang, Liqing Li, and Kaimin Shih
Environmental Science & Technology 2015 49 (12), 7373-7379
DOI: 10.1021/acs.est.5b01104

33. Charge, Size, and Cellular Selectivity for Multiwall Carbon Nanotubes by Maize and Soybean

Guangshu Zhai, Sarah M. Gutowski, Katherine S. Walters, Bing Yan, and Jerald L. Schnoor
Environmental Science & Technology 2015 49 (12), 7380-7390
DOI: 10.1021/acs.est.5b01145

34. Modular Advanced Oxidation Process Enabled by Cathodic Hydrogen Peroxide Production

James M. Barazesh, Tom Hennebel, Justin T. Jasper, and David L. Sedlak
Environmental Science & Technology 2015 49 (12), 7391-7399
DOI: 10.1021/acs.est.5b01254

35. Gene Transcription, Metabolite and Lipid Profiling in Eco-Indicator *Daphnia magna* Indicate Diverse Mechanisms of Toxicity by Legacy and Emerging Flame-Retardants

Leona D. Scanlan, Alexandre V. Loguinov, Quincy Teng, Philipp Antczak, Kathleen P. Dailey, Daniel T. Nowinski, Jonah Kornbluh, Xin Xin Lin, Erica Lachenauer, Audrey Arai, Nora K. Douglas, Francesco Falciani, Heather M. Stapleton, and Chris D. Vulpe
Environmental Science & Technology 2015 49 (12), 7400-7410
DOI: 10.1021/acs.est.5b00977

36. Partitioning Behavior of Heavy Metals and Persistent Organic Pollutants among Feto-Maternal Bloods and Tissues

Jun-Tae Kim, Min-Hui Son, Duk-Hee Lee, Won Joon Seong, Seunghee Han, and Yoon-Seok Chang
Environmental Science & Technology 2015 49 (12), 7411-7422
DOI: 10.1021/es5051309

37. Real-Time Particulate and CO Concentrations from Cookstoves in Rural Households in Udaipur, India

Anna Leavey, Jessica Londeree, Pratiti Priyadarshini, Jagdeesh Puppala, Kenneth B. Schechtman, Gautam Yadama, and Pratim Biswas
Environmental Science & Technology 2015 49 (12), 7423-7431
DOI: 10.1021/acs.est.5b02139

38. Effect of Thiols, Zinc, and Redox Conditions on Hg Uptake in *Shewanella oneidensis*

Aleksandra Szczuka, François M. M. Morel, and Jeffra K. Schaefer
Environmental Science & Technology 2015 49 (12), 7432-7438
DOI: 10.1021/acs.est.5b00676

39. Understanding the Molecular Basis for Differences in Responses of Fish Estrogen Receptor Subtypes to Environmental Estrogens

Saki Tohyama, Shinichi Miyagawa, Anke Lange, Yukiko Ogino, Takeshi Mizutani, Norihisa Tatarazako, Yoshinao Katsu, Masaru Ihara, Hiroaki Tanaka, Hiroshi Ishibashi, Tohru Kobayashi, Charles R. Tyler, and Taisen Iguchi
Environmental Science & Technology 2015 49 (12), 7439-7447
DOI: 10.1021/acs.est.5b00704

40. Investigating Endocrine and Physiological Parameters of Captive American Kestrels Exposed by Diet to Selected Organophosphate Flame Retardants

Kimberly J. Fernie, Vince Palace, Lisa E. Peters, Nil Basu, Robert J. Letcher, Natalie K. Karouna-Renier, Sandra L. Schultz, Rebecca S. Lazarus, and Barnett A. Rattner
Environmental Science & Technology 2015 49 (12), 7448-7455
DOI: 10.1021/acs.est.5b00857

41. Photodynamic Inactivation of Bacteria Using Novel Electrogenerated Porphyrin-Fullerene C60 Polymeric Films

M. Belén Ballatore, Javier Durantini, Natalia S. Gsponer, María B. Suarez, Miguel Gervaldo, Luis Otero, Mariana B. Spesia, M. Elisa Milanesio, and Edgardo N. Durantini
Environmental Science & Technology 2015 49 (12), 7456-7463
DOI: 10.1021/acs.est.5b01407

42. Synthesis of Highly Efficient CaO-Based, Self-Stabilizing CO₂ Sorbents via Structure-Reforming of Steel Slag

Sicong Tian, Jianguo Jiang, Feng Yan, Kaimin Li, and Xuejing Chen
Environmental Science & Technology 2015 49 (12), 7464-7472
DOI: 10.1021/acs.est.5b00244

43. The Effects of Neat Biodiesel and Biodiesel and HVO Blends in Diesel Fuel on Exhaust Emissions from a Light Duty Vehicle with a Diesel Engine

Adam Prokopowicz, Marzena Zaciera, Andrzej Sobczak, Piotr Bielaczyc, and Joseph Woodburn
Environmental Science & Technology 2015 49 (12), 7473-7482
DOI: 10.1021/acs.est.5b00648

44. Impact of Iron-Reducing Bacteria on the Corrosion Rate of Carbon Steel under Simulated Geological Disposal Conditions

Marta K. Schütz, Michel L. Schlegel, Marie Libert, and Olivier Bildstein
Environmental Science & Technology 2015 49 (12), 7483-7490
DOI: 10.1021/acs.est.5b00693

45. Evaluating the Climate Benefits of CO₂-Enhanced Oil Recovery Using Life Cycle Analysis

Gregory Cooney, James Littlefield, Joe Marriott, and Timothy J. Skone
Environmental Science & Technology 2015 49 (12), 7491-7500
DOI: 10.1021/acs.est.5b00700

46. Comment on “UV Disinfection Induces a Vbnc State in *Escherichia coli* and *Pseudomonas aeruginosa*”

Ronald Gehr
Environmental Science & Technology 2015 49 (12), 7501-7501
DOI: 10.1021/acs.est.5b00769

47. Response to Comment on “UV Disinfection Induces a Vbnc State in *Escherichia coli* and *Pseudomonas aeruginosa*”

Xin Yu, Shenghua Zhang, Chengsong Ye, Wenfang Lin, Huirong Lin, and Lu Lv
Environmental Science & Technology 2015 49 (12), 7502-7503
DOI: 10.1021/acs.est.5b01681

48. Comment on “Unexpected Occurrence of Volatile Dimethylsiloxanes in Antarctic Soils, Vegetation, Phytoplankton, and Krill”

Nicholas A. Warner, Ingjerd S. Krogseth, and Mick J. Whelan
Environmental Science & Technology 2015 49 (12), 7504-7506
DOI: 10.1021/acs.est.5b01612

49. Comment on “Unexpected Occurrence of Volatile Dimethylsiloxanes in Antarctic Soils, Vegetation, Phytoplankton, and Krill”

Donald Mackay, Frank Gobas, Keith Solomon, Matthew Macleod, Michael McLachlan, David E. Powell, and Shihe Xu
Environmental Science & Technology 2015 49 (12), 7507-7509
DOI: 10.1021/acs.est.5b01936

50. Response to Comments on “Unexpected Occurrence of Volatile Dimethylsiloxanes in Antarctic Soils, Vegetation, Phytoplankton and Krill”

Josep Sanchís, Ana Cabrerizo, Cristóbal Galbán-Malagón, Damià Barceló, Marinella Farré, and Jordi Dachs
Environmental Science & Technology 2015 49 (12), 7510-7512
DOI: 10.1021/acs.est.5b02184