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January 15, 2011

Volume 45, Issue 2

Pages 353-836

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About the Cover:

Flows of material in many contexts are dubbed a "stream". However, their origin and location can often dictate what they flow into: a "natural water stream" flows into a creek/river/lake, while a "storm water stream" flows into a ditch/culvert/reservoir. While these may appear mere semantics, the legal definitions can have significant implications for consigning liability in cases of adulteration. In this issue Doyle and Bernhardt discuss the hydrological definitions of a "stream" and the policy implications thereof. Cover concept by Darcy Gentleman, layout by Jeff Ward using images from Shutterstock. [View the article.](#)

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Water, Water Everywhere

Darcy J. Gentleman

p 353

Publication Date (Web): January 13, 2011 ([Comment](#))

DOI: 10.1021/es104137n

Abstract

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Features

What is a stream?

Martin W. Doyle and Emily S. Bernhardt


pp 354-359

Publication Date (Web): December 6, 2010 ([Feature](#))

DOI: 10.1021/es101273f

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Viewpoint

Economic Transformation, Technological Innovation, and Policy and Institutional Reforms Hold Keys to Relieving China's Water Shortages

Hefa Cheng and Yuanan Hu


pp 360-361

Publication Date (Web): December 2, 2010 ([Viewpoint](#))

DOI: 10.1021/es1038744

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Athanasios Katsoyiannis and Kevin C. Jones

pp 362-363

Publication Date (Web): December 13, 2010 ([Viewpoint](#))

DOI: 10.1021/es103929x

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Gregg T. Tomy, Vince Palace, Chris Marvin, Heather M. Stapleton, Adrian Covaci, and Stuart Harrad

pp 364-365

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DOI: 10.1021/es1039369

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Mae Wu , Sarah Janssen

pp 366-367

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“Clinical” and Evidence-Based Environmental Science and Engineering





Michael D. Aitken

pp 368-369

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Critical Reviews

Bacteria in Beach Sands: An Emerging Challenge in Protecting Coastal Water Quality and Bather Health





Elizabeth Halliday and Rebecca J. Gast

pp 370-379

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Policy Analysis




Improvements in the Operation of SO₂ Scrubbers in China’s Coal Power Plants

Yuan Xu

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Tetracycline Resistance Genes Persist at Aquaculture Farms in the Absence of Selection Pressure

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Manu Tamminen, Antti Karkman, Andres Lõhmus, Windi Indra Muziasari, Hiroyuki Takasu, Shigeki Wada, Satoru Suzuki, and Marko Virta

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DOI: 10.1021/es102725n

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Bioaccumulation of Several Brominated Flame Retardants and Dechlorane Plus in Waterbirds from an E-Waste Recycling Region in South China: Associated with Trophic Level and Diet Sources

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Facilitated Transport of Dioxins in Soil Following Unintentional Release of Pesticide-

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Surfactant Formulations

Sharon Grant, Munro Mortimer, Gavin Stevenson, Don Malcolm, and Caroline Gaus

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New Technique for Quantification of Elemental Hg in Mine Wastes and Its Implications for Mercury Evasion Into the Atmosphere





Adam D. Jew, Christopher S. Kim, James J. Rytuba, Mae S. Gustin, and Gordon E. Brown, Jr.

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Antibiotic Resistance Gene Abundances Associated with Waste Discharges to the Almendares River near Havana, Cuba





David W. Graham, Susana Olivares-Rieumont, Charles W. Knapp, Lazaro Lima, David Werner, and Emma Bowen

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Jazmín E. Aravena, Markus Berli, Teamrat A. Ghezzehei, and Scott W. Tyler

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Relationship between Surface and Free Tropospheric Ozone in the Western U.S.





Dan Jaffe

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Carbon and Sulfur Cycling by Microbial Communities in a Gypsum-Treated Oil Sands Tailings Pond





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Broad Dissemination of Plasmid-Mediated Quinolone Resistance Genes in Sediments of Two Urban Coastal Wetlands





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Joseph Essilfie-Dughan, Ingrid J. Pickering, M. Jim Hendry, Graham N. George, and Tom Kotzer

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Martin Schmitz, Georg Scheeder, Sarah Bernau, Reiner Dohrmann, and Klaus Germann

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Determining Human Exposure and Sensory Detection of Odorous Compounds Released During Showering





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Metabolites Indicate Hot Spots of Biodegradation and Biogeochemical Gradients in a High-Resolution Monitoring Well

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CO₂-Efflux Measurements for Evaluating Source Zone Natural Attenuation Rates in a Petroleum Hydrocarbon Contaminated Aquifer





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Evaluation of a Radioiodine Plume Increasing in Concentration at the Savannah River Site





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Environmental Processes

Legacy and Fate of Mercury and Methylmercury in the Florida Everglades





Guangliang Liu, G. Melodie Naja, Peter Kalla, Dan Scheidt, Evelyn Gaiser, and Yong Cai

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Publication Date (Web): December 15, 2010 (Article)

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Cr Stable Isotopes in Snake River Plain Aquifer Groundwater: Evidence for Natural Reduction of Dissolved Cr(VI)





Amanda L. Raddatz, Thomas M. Johnson, and Travis L. McLing

pp 502-507

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Predominant Contribution of Syntrophic Acetate Oxidation to Thermophilic Methane Formation at High Acetate Concentrations





Li-Ping Hao, Fan LÜ, Pin-Jing He, Lei Li, and Li-Ming Shao

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Effects of Beijing Olympics Control Measures on Reducing Reactive Hydrocarbon Species





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Fractionation of Organic Matter Due to Reaction with Ferrihydrite: Coprecipitation versus Adsorption





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Karin Eusterhues, Thilo Rennert, Heike Knicker, Ingrid Kögel-Knabner, Kai U. Totsche, and Udo Schwertmann

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Converting Poly(ethylene terephthalate) Waste into Carbon Microspheres in a Supercritical CO₂ System





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Lingzhi Wei, Nan Yan, and Qianwang Chen

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Spectroscopic Evidence for Interfacial Fe(II)–Fe(III) Electron Transfer in a Clay Mineral





Michael V. Schaefer, Christopher A. Gorski, and Michelle M. Scherer

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DOI: 10.1021/es102560m

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Influence of Natural Organic Matter on As Transport and Retention





Prasesh Sharma, Massimo Rolle, Benjamin Kocar, Scott Fendorf, and Andreas Kappler

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Air Pollutants Formed in Thermal Decomposition of Folpet Fungicide under Oxidative Conditions





Kai Chen, John C. Mackie, Eric M. Kennedy, and Bogdan Z. Dlugogorski

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Quantification of the Effects of Organic and Carbonate Buffers on Arsenate and Phosphate Adsorption on a Goethite-Based Granular Porous Adsorbent

Masakazu Kanematsu, Thomas M. Young, Keisuke Fukushi, Dimitri A. Sverjensky, Peter G. Green, and Jeannie L.





Darby

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Climate Sensitivity of Gaseous Elemental Mercury Dry Deposition to Plants: Impacts of Temperature, Light Intensity, and Plant Species





Andrew P. Rutter, James J. Schauer, Martin M. Shafer, Joel Creswell, Michael R. Olson, Alois Clary, Michael Robinson, Andrew M. Parman, and Tanya L. Katzman

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Anaerobic Fluidized Bed Membrane Bioreactor for Wastewater Treatment





Jeonghwan Kim, Kihyun Kim, Hyoungyoung Ye, Eunyoung Lee, Chungheon Shin, Perry L. McCarty, and Jaeho Bae

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Transport Implications Resulting from Internal Redistribution of Arsenic and Iron within Constructed Soil Aggregates





Yoko Masue-Slowey, Benjamin D. Kocar, Sergio Andrés Beza Jofré, K. Ulrich Mayer, and Scott Fendorf

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Formation and Stabilization of Combustion-Generated Environmentally Persistent Free Radicals on an Fe(III)₂O₃/Silica Surface





Eric Vejerano, Slawomir Lomnicki, and Barry Dellinger

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Control and Cleaning of Membrane Biofouling by Energy Uncoupling and Cellular Communication





Huijuan Xu and Yu Liu

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Sorption and Desorption of Pyrethroid Insecticide Permethrin on Concrete





Weiyang Jiang, Jay Gan, and Darren Haver

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First Direct Detection of HONO in the Reaction of Methylnitrite (CH_3ONO) with OH Radicals





M. Djehiche, A. Tomas, C. Fittschen, and P. Coddeville

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Saccharin and Other Artificial Sweeteners in Soils: Estimated Inputs from Agriculture and Households, Degradation, and Leaching to Groundwater





Ignaz J. Buerge, Martina Keller, Hans-Rudolf Buser, Markus D. Müller, and Thomas Poiger

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Land Use Regression Model for Ultrafine Particles in Amsterdam

Gerard Hoek, Rob Beelen, Gerard Kos, Marieke Dijkema, Saskia C van der Zee, Paul H Fischer, and Bert

Brunekreef

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Rosalie van Zelm, Aafke M. Schipper, Michiel Rombouts, Judith Snepvangers, and Mark A. J. Huijbregts

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Rosanna Gabrieli, and Anna Rita Petrinca

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Fei Xu, Wannu Yu, Qin Zhou, Rui Gao, Xiaoyan Sun, Qingzhu Zhang, and Wenxing Wang

pp 643-650

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Pesticide Uptake in Potatoes: Model and Field Experiments

Ronnie Juraske, Carmen S. Mosquera Vivas, Alexander Erazo Velásquez, Glenda García Santos, Mónica B. Berdugo Moreno, Jaime Diaz Gomez, Claudia R. Binder, Stefanie Hellweg, and Jairo A. Guerrero Dallos

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Environmental Measurements Methods

Optical Remote Sensing To Quantify Fugitive Particulate Mass Emissions from Stationary Short-Term and Mobile Continuous Sources: Part I. Method and Examples

Ke Du, Mark J. Rood, Ellsworth J. Welton, Ravi M. Varma, Ram A. Hashmonay, Byung J. Kim and Michael R. Kemme

pp 658-665

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Optical Remote Sensing to Quantify Fugitive Particulate Mass Emissions from Stationary Short-Term and Mobile Continuous Sources: Part II. Field Applications

Ke Du, Wangki Yuen, Wei Wang, and Mark J. Rood, Ravi M. Varma, Ram A. Hashmonay, Byung J. Kim and Michael R. Kemme

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Quantification of Dissolved Organic Carbon at Very Low Levels in Natural Ice Samples by a

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UV-Induced Oxidation Method

S. Preunkert, M. Legrand, P. Stricker, S. Bulat, I. Alekhina, J. R. Petit, H. Hoffmann, B. May, and B. Jourdain

pp 673-678

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Predictors of Polychlorinated Biphenyl Concentrations in Adipose Tissue in a General Danish Population





Elvira V. Bräuner, Ole Raaschou-Nielsen, Eric Gaudreau, Alain LeBlanc, Anne Tjønneland, Kim Overvad, and Mette Sørensen

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Onset of Industrial Pollution Recorded in Mumbai Mudflat Sediments, Using Integrated Magnetic, Chemical, ²¹⁰Pb Dating, and Microscopic Methods





U. Blaha, N. Basavaiah, K. Deenadayalan, D. V. Borole, and R. D. Mohite

pp 686-692

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DOI: 10.1021/es1025905

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Dechloranes 602, 603, 604, Dechlorane Plus, and Chlordene Plus, a Newly Detected Analogue, in Tributary Sediments of the Laurentian Great Lakes





Li Shen, Eric J. Reiner, Karen A. MacPherson, Terry M. Kolic, Paul A. Helm, Lisa A. Richman, Chris H. Marvin, Debbie A. Burniston, Brad Hill, Ian D. Brindle, Robert McCrindle, and Brock G. Chittim

pp 693-699

Publication Date (Web): December 6, 2010 (Article)

DOI: 10.1021/es1027844

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Determination of Dissolved Oxygen in the Cryosphere: A Comprehensive Laboratory and Field Evaluation of Fiber Optic Sensors





E. A. Bagshaw, J. L. Wadham, M. Mowlem, M. Tranter, J. Eveness, A. G. Fountain, and J. Telling

pp 700-705

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Remediation and Control Technologies

Conversion of Elemental Mercury with a Novel Membrane Delivery Catalytic Oxidation System (MDCOs)





Yongfu Guo, Naiqiang Yan, Shijian Yang, Zan Qu, Zhongbiao Wu, Yue Liu, Ping Liu, and Jinping Jia

pp 706-711

Publication Date (Web): December 15, 2010 (Article)

DOI: 10.1021/es1020586

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Effects of Elevated Temperature on *Dehalococcoides* Dechlorination Performance and DNA and RNA Biomarker Abundance

Kelly E. Fletcher, Jed Costanza, Claribel Cruz-Garcia, Nivedhya S. Ramaswamy, Kurt D. Pennell, and Frank E. L





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pp 712-718

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Recovery of Phenanthrene-Degrading Bacteria after Simulated in Situ Persulfate Oxidation in Contaminated Soil

Stephen D. Richardson, Benjamin L. Lebron, Cass T. Miller, and Michael D. Aitken

pp 719-725

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Catalytic Decomposition of Toxic Chemicals over Metal-Promoted Carbon Nanotubes

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Lili Li, Changxiu Han, Xinyu Han, Yixiao Zhou, Li Yang, Baogui Zhang, and Jianli Hu

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Control of Electrothermal Heating during Regeneration of Activated Carbon Fiber Cloth

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David L. Johnsen, Kaitlin E. Mallouk, and Mark J. Rood

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Photoassisted Fenton Degradation of Polystyrene

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Hui-Min Feng, Jia-Chuan Zheng, Ngai-Yu Lei, Lei Yu, Karen Hoi-Kuan Kong, Han-Qing Yu, Tai-Chu Lau, and

Michael H. W. Lam

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Power-Law Relationships for Estimating Mass, Fuel Consumption and Costs of Energy Conversion Equipments

Marloes Caduff, Mark A. J. Huijbregts, Hans-Joerg Althaus, and A. Jan Hendriks

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Ecotoxicology and Human Environmental Health

Stability, Bioavailability, and Bacterial Toxicity of ZnO and Iron-Doped ZnO Nanoparticles in Aquatic Media

Minghua Li, Suman Pokhrel, Xue Jin, Lutz Mädler, Robert Damoiseaux, and Eric M. V. Hoek

pp 755-761

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Differential Gene Expression in *Daphnia magna* Suggests Distinct Modes of Action and Bioavailability for ZnO Nanoparticles and Zn Ions

Helen C. Poynton, James M. Lazorchak, Christopher A. Impellitteri, Mark E. Smith, Kim Rogers, Manomita Patra,

Katherine A. Hammer, H. Joel Allen, and Chris D. Vulpe

pp 762-768

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Effects of Prochloraz or Propylthiouracil on the Cross-Talk between the HPG, HPA, and HPT Axes in Zebrafish





Chunsheng Liu, Xiaowei Zhang, Jun Deng, Markus Hecker, Abdulaziz Al-Khedhairi, John P. Giesy, and Bingsheng Zhou

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Evidence for Biomagnification of Gold Nanoparticles within a Terrestrial Food Chain





Jonathan D. Judy, Jason M. Unrine, and Paul M. Bertsch

pp 776-781

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Dehalogenation of Iodinated X-ray Contrast Media in a Bioelectrochemical System





Yang Mu, Jelena Radjenovic, Jinyou Shen, René A. Rozendal, Korneel Rabaey, and Jürg Keller

pp 782-788

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Forest Bioenergy or Forest Carbon? Assessing Trade-Offs in Greenhouse Gas Mitigation with Wood-Based Fuels

Jon McKechnie, Steve Colombo, Jiaxin Chen, Warren Mabee, and Heather L. MacLean

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Novel Methanogenic Rotatable Bioelectrochemical System Operated with Polarity Inversion

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Ka Yu Cheng, Goen Ho, and Ralf Cord-Ruwisch

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A New Process for Efficiently Producing Methane from Waste Activated Sludge: Alkaline Pretreatment of Sludge Followed by Treatment of Fermentation Liquid in an EGSB Reactor

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CO₂ Adsorption on Carbon Models of Organic Constituents of Gas Shale and Coal

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Electricity-Assisted Biological Hydrogen Production from Acetate by *Geobacter sulfurreducens*

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Ironmaking with Ammonia at Low Temperature

Sou Hosokai, Yoshiaki Kasiwaya, Kosuke Matsui, Noriyuki Okinaka, and Tomohiro Akiyama

pp 821-826

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Determination of the Internal Chemical Energy of Wastewater

E. S. Heidrich, T. P. Curtis, and J. Dolfing

pp 827-832

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Comment on “Environmental Life Cycle Comparison of Algae to Other Bioenergy Feedstocks”

C. Meghan Starbuck

p 833

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