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EDITORIAL

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Editorial Perspectives: we need innovation for water, sanitation, and hygiene (WASH) in developing communities

Jeremy S. Guest

Lack of access to safe water, pervasive contamination from bodily waste, and limited access to hygiene resources and services remain a massive challenge. Jeremy Guest discusses the need for innovation to put us on a more sustainable trajectory in this 'Editorial Perspective'.

TUTORIAL REVIEW

821

Adsorption of organic micropollutants onto biochar: a review of relevant kinetics, mechanisms and equilibrium

Yiran Tong, Patrick J. McNamara and Brooke K. Mayer*

As an alternative to activated carbon, biochar has been considered for removal of organic micropollutants from water and wastewater *via* adsorption.

839

Hydrogen sulfide generation and emission in urban sanitary sewer in China: what factor plays the critical role?

Zhiqiang Zuo, Jian Chang, Zhengsheng Lu, Moran Wang, Yucong Lin, Min Zheng, David Z. Zhu, Tong Yu, Xia Huang and Yanchen Liu*

Identifying hydrogen sulfide (H₂S) hotspots is critical for preventing/controlling odor and corrosion problems in sewer systems.

849

Biodegradation and attenuation of MIB and 2,4-D in drinking water biologically active sand and activated carbon filters

Kyle K. Shimabuku,* Thomas L. Zearley, Katherine S. Dowdell and R. Scott Summers

Biologically acclimated sand and granular activated carbon (GAC) filter performance for trace organic contaminant control is compared under variable water quality and operational conditions.

861

Waterworks-specific composition of drinking water disinfection by-products

Anna Andersson,* Mourad Harir, Michael Gonsior, Norbert Hertkorn, Philippe Schmitt-Kopplin, Henrik Kylin, Susanne Karlsson, Muhammad Jamshaid Ashiq, Elin Lavonen, Kerstin Nilsson, Åmma Pettersson, Helena Stavklint and David Bastviken

Non-target analysis of potentially toxic disinfection by-products at four waterworks in Sweden.

873

Soft electrodes in water desalination: application to multi-valent ions

G. R. Iglesias, S. Ahualli, M. M. Fernández, M. L. Jiménez and A. V. Delgado*

The capacitive deionization (CDI) method, in which the capacitance of the electrical double layers is used for removing ions from aqueous solutions, can be more efficient if some procedures are devised to help the bare electrode double layers in adsorbing ions.

884

Insights gained into activated sludge nitrification through structural and functional profiling of microbial community response to starvation stress

Jacob W. Metch, Hong Wang, Yanjun Ma, Jennifer H. Miller, Peter J. Vikesland, Charles Bott, Matthew Higgins, Sudhir Murthy and Amy Pruden*

An improved understanding of nitrifying microbial communities in wastewater treatment is imperative for proper design and operation of biological nutrient removal systems.

897

Photodegradation of pharmaceutical compounds in partially nitrated wastewater during UV irradiation

Priya I. Hora, Paige J. Novak and William A. Arnold*

Photosensitized destruction of pharmaceuticals is facilitated by UV exposure after generation of nitrite *via* partial nitrification.

910

Impact of repeated pressurization on virus removal by reverse osmosis membranes for household water treatment

Shotaro Torii,* Takashi Hashimoto, An Thuan Do, Hiroaki Furumai and Hiroyuki Katayama

Repeated pressurization caused integrity loss at the surface of reverse osmosis membranes resulting in a dramatic decrease in virus removal.

920

Removal of dimethyl phthalate in water by non-thermal air plasma treatment

Zhi Hua Qi, Liu Yang, Yang Xia, Zhen Feng Ding, Jin Hai Niu,* Dong Ping Liu,* Yao Zhao, Long Fei Ji, Ying Song and Xue Song Lin

In this study, the effect of a non-thermal microplasma array on the degradation of dimethyl phthalate (DMP) solution was investigated using a high pressure liquid chromatograph and mass spectrometer (LC-MS).

931

Simultaneous recovery of phosphate, ammonium and humic acid from wastewater using a biochar supported Mg(OH)₂/bentonite composite

Huan-Ping Jing, Yuan Li, Xuejiang Wang,* Jianfu Zhao and Siqing Xia

A biochar-supported Mg(OH)₂/bentonite composite showed high efficiency for the simultaneous recovery of phosphate, ammonium and humic acid from wastewater.

944

Rejection of micron-sized particles using beech wood xylem

Selin Vitas, Paul Beckmann, Bertram Skibinski, Christian Goldhahn, Livius F. Muff and Etienne Cabane*

Investigating the removal efficiency of wood tissue in a dead-end filtration of micron-sized surrogates by determining the log removal values as well as the permeability of the material to water.

956

Removal of estrogenic compounds via iron electrocoagulation: impact of water quality and assessment of removal mechanisms

Emily K. Maher, Cassidy N. O'Malley, Joe Heffron, Jingwan Huo, Yin Wang, Brooke K. Mayer and Patrick J. McNamara*

The influence of water quality and elucidation of the removal mechanism of estrogenic compounds removal electrocoagulation.

967

Removal of 3-chloro-4(dichloromethyl)-2(5H)-furanone (MX) precursors during drinking water biofiltration

Noreen Mian,* Robert C. Andrews and Susan A. Andrews

MX precursor removal was compared at pilot-scale in continuously and cyclically operated biofilters with empty bed contact times (EBCTs) of 15 and 30 minutes.

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Influence of hydraulic regimes and $\text{Cl}_2/\text{NH}_3\text{-N}$ mass ratios on the bacterial structure and composition in an experimental flow cell chloraminated drinking water system

Yi Shi,* Akintunde Babatunde, Bettina Bockelmann-Evans and Gordon Webster

A novel microbial analysis regarding impacts of hydraulic regimes and $\text{Cl}_2/\text{NH}_3\text{-N}$ mass ratios is provided for an experimental chloraminated DWDS experiencing nitrification.

993

Enhanced nutrient removal in bioretention systems modified with water treatment residuals and internal water storage zone

Fuguo Qiu, Shuang Zhao, Dongye Zhao,* Juanli Wang and Kunming Fu

Bioretention systems modified with water treatment residuals and internal water storage zone are effective for removal of N, P, TSS, COD, and heavy metals in rainfall runoff.

1004

An optimised control system to steer the transition from anaerobic mono- to co-digestion in full-scale plants

A. Taboada-Santos,* M. Carballa, N. Morales, J. R. Vázquez-Padín, R. Gutierrez and J. M. Lema

The proposed control system allowed a full-scale sludge anaerobic digester to be safely steered from mono- to co-digestion and to raise methane production by 3-fold, increasing the self-produced electricity from 25% to 75% of the total demand of the WWTP.

1012

Reduction of scaling in microwave induced membrane distillation on a carbon nanotube immobilized membrane

Madihah Saud Humoud, Worawit Intrchom, Sagar Roy and Somenath Mitra*

Membrane distillation (MD) is an emerging technology that has much potential in desalination and treatment of saline waste.