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**Research highlights: antibiotic resistance genes:  
from wastewater into the environment**

David T. Tan\* and Danmeng Shuai

We highlight the effects of treated and untreated wastewater on antibiotic resistance genes (ARGs) in the environment, attenuation of ARGs following land application of wastewater solids, and a quantitative model for natural transformation.

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**Drinking water purity – a UK perspective**

John Machell,\* Kevin Prior, Richard Allan and  
John M. Andresen

This article outlines a UK-based perspective on the meaning of water purity based on relevant literature and consultation with members of the Water Science Forum of the Royal Society of Chemistry.

**Can meta-omics help to establish causality between contaminant biotransformations and genes or gene products?**

David R. Johnson, Damian E. Helbling, Yujie Men and Kathrin Fenner\*

There is increasing interest in using meta-omics association studies to investigate contaminant biotransformations.

**Sediment microbial fuel cells for wastewater treatment: challenges and opportunities**

Bojun Xu, Zheng Ge and Zhen He\*

Sediment microbial fuel cells can potentially be applied as an energy-efficient method for wastewater treatment.

**The consumptive water footprint of electricity and heat: a global assessment**

Mesfin M. Mekonnen,\* P. W. Gerbens-Leenes and Arjen Y. Hoekstra

This study assesses the global consumptive water footprint of electricity and heat production for different energy sources per world region.

**Selective adsorption of oil–water mixtures using polydimethylsiloxane (PDMS)–graphene sponges**

Diana N. H. Tran, Shervin Kabiri, Ting Rui Sim and Dusan Losic\*

Porous 3-D PDMS–graphene sponges with hydrophobic and oleophilic properties were successfully prepared for the removal of mixed oil from water.

**Impact of indigenous microbiota of subtidal sand on fecal indicator bacteria decay in beach systems: a microcosm study**

Qian Zhang, Xia He and Tao Yan\*

Fecal contamination of coastal recreational water can adversely impact the public health and economic well-being of many coastal communities.

**Triclosan, chlorinated triclosan derivatives, and hydroxylated polybrominated diphenyl ethers (OH-BDEs) in wastewater effluents**

R. Noah Hensley, Jill F. Kerrigan, Hao Pang, Paul R. Erickson, Matthew Grandbois, Kristopher McNeill and William A. Arnold\*

Triclosan, chlorinated triclosan derivatives, and hydroxylated polybrominated diphenyl ethers (OH-BDEs) were detected in large and small capacity wastewater treatment plants.

**Extracting metal ions from water with redox active biopolymer electrodes**

Shimelis Admassie,\* Anders Elfving, Andreas Skallberg and Olle Inganäs

Lignin which is a renewable, environmentally friendly and cheap material is investigated as a promising material for use in energy storage and waste-water treatment technologies.

**Measuring poly(acrylamide) flocculants in fresh water using inter-polymer complex formation**

Thomas Swift, Linda Swanson, Andrew Bretherick and Stephen Rimmer\*

A novel detection method for poly(acrylamide) flocculants was developed using interpolymer complexation between flocculants and a probe (poly(acrylic acid-co-acenaphthylene)).

**Energy-efficient desalination by forward osmosis using responsive ionic liquid draw solutes**

Yufeng Cai, Wenming Shen, Jing Wei, Tzyy Haur Chong, Rong Wang, William B. Krantz, Anthony G. Fane and Xiao Hu\*

New thermally responsive ionic liquid draw solutes generate high flux against seawater with substantially reduced electrical energy consumption.

**Membrane configuration influences microbial capacitive desalination performance**

Dandan Ma, Casey Forrestal, Min Ji, Ruying Li, Hongting Ma and Zhiyong Jason Ren\*

A microbial capacitive desalination cell (MCDC) is a new bioelectrochemical reactor for energy-positive wastewater treatment and desalination.

**Optimizing the performance of a membrane bio-electrochemical reactor using an anion exchange membrane for wastewater treatment**

Jian Li and Zhen He\*

The use of an anion exchange membrane can significantly improve nitrogen removal in a membrane bioelectrochemical reactor.

**A kinetic model of gene transfer *via* natural transformation of *Azotobacter vinelandii***

Nanxi Lu, Arash Massoudieh,\* Xiaomeng Liang, Tamir Kamai, Julie L. Zilles, Thanh H. Nguyen and Timothy R. Ginn

Horizontal gene transfer allows antibiotic resistance and other genetic traits to spread among bacteria in the aquatic environment.

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**Aryl hydrocarbon receptor potency of chlorinated parabens in the aquatic environment**

Masanori Terasaki,\* Michiko Yasuda, Masakazu Makino and Kayoko Shimoi

Parabens are widely used as preservatives in personal care products.

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**Biofilm formation of anoxygenic photosynthetic bacteria induced by phototaxis for enhancing hydrogen production**

Xingzu Wang, Kaiji Xie, Xiang Cheng, Yiwei Ren\* and Chunli Wan\*

Phototaxis induced biofilm formation of anoxygenic photosynthetic bacteria on an illuminated sidewall in a photobioreactor.