

February 1, 2008

# ENVIRONMENTAL Science & Technology

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## **Differences *in* PHOSPHORUS *and* NITROGEN DELIVERY *to* *the* Gulf of Mexico**

**Biodegradation of a Fluoroacrylate  
Polymer in Aerobic Soils**

**Sustainable Ceramic Filter for  
Point-of-Use Water Treatment**

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## CHARACTERIZATION OF NATURAL AND AFFECTED ENVIRONMENTS

■ 665

### Improved Field Methods to Quantify Methane Oxidation in Landfill Cover Materials Using Stable Carbon Isotopes

J. P. Chanton,\* D. K. Powelson, T. Abichou, and G. Hater

Using a new approach, landfill cover methane oxidation was found to be  $23 \pm 3\%$  and  $38 \pm 16\%$  of emitted methane for four soil and three compost covers, respectively.

■ 671

### Processes Controlling the Thermal Regime of Saltmarsh Channel Beds

Kevan B. Moffett,\* Scott W. Tyler, Thomas Torgersen, Manoj Menon, John S. Selker, and Steven M. Gorelick

The salt marsh channel bed thermal regime exhibits hydroecologically significant microtributary-related thermal anomalies and horizontal thermal gradients co-dominated by tidal and groundwater influences.

■ 677

### Methyl *tert*-Butyl Ether (MTBE) in Public and Private Wells in New Hampshire: Occurrence, Factors, and Possible Implications

Joseph D. Ayotte,\* Denise M. Argue, Frederick J. McGarry, James R. Degnan, Laura Hayes, Sarah M. Flanagan, and Dennis R. Helsel

A high prevalence of low-level MTBE contamination in untreated groundwater from public and private wells throughout New Hampshire is found, particularly in high population density former RFG-use portions of the state.

■ 685

### Regional Trend and Tissue Distribution of Brominated Flame Retardants and Persistent Organochlorines in Raccoon Dogs (*Nyctereutes procyonoides*) from Japan

Tatsuya Kunisue, Nozomi Takayanagi, Tomohiko Isobe, Shin Takahashi, Susumu Nakatsu, Toshio Tsubota, Keisuke Okumoto, Sumio Bushisue, Kazuyuki Shindo, and Shinsuke Tanabe\*

Japanese raccoon dogs, a wild terrestrial mammal, have been exposed to region-specific PBDEs and HBCDs, and the levels are higher than those in humans.

■ 692

### Tracing of Industrial Aerosol Sources in an Urban Environment Using Pb, Sr, and Nd Isotopes

Majdi Lahd Geagea, Peter Stille,\* François Gauthier-Lafaye, and Maurice Millet

Pb, Sr, and Nd isotope data of tree bark, aerosols, soot, and filter dust allow tracing of atmospheric heavy metal pollution.

■ 699

### Aggregation and Disaggregation of Humic Supramolecular Assemblies by NMR Diffusion Ordered Spectroscopy (DOSY-NMR)

Daniela Šmejkalová and Alessandro Piccolo\*

Aggregation and disaggregation of fulvic and humic acids by means of diffusion ordered NMR spectroscopy (DOSY).

■ 707

### Monitoring Polycyclic Aromatic Hydrocarbon Pollution in the Marine Environment after the *Prestige* Oil Spill by Means of Seabird Blood Analysis

Cristóbal Pérez, Alberto Velando,\* Ignacio Munilla, Marta López-Alonso, and Daniel Oro

Seabirds were exposed to *Prestige* oil 17 months after the spill, supporting the use of seabird blood to monitor oil pollution.

## ENVIRONMENTAL PROCESSES

■ 714

### Unified Membrane Fouling Index for Low Pressure Membrane Filtration of Natural Waters: Principles and Methodology

2C ■ ENVIRONMENTAL SCIENCE & TECHNOLOGY / FEBRUARY 1, 2008

Haiou Huang, Thayer A. Young, and Joseph G. Jacangelo\*

Unified membrane fouling index is established theoretically and applied to the assessment of short- and long-term performance of commercial MF/UF membranes in water treatment.

721

### Particulate-Phase and Gaseous Elemental Mercury Emissions During Biomass Combustion: Controlling Factors and Correlation with Particulate Matter Emissions

Daniel Obrist,\* Hans Moosmüller, Roger Schürmann, L.-W. Antony Chen, and Sonia M. Kreidenweis

High particulate-phase mercury emissions during wildfires can be expected during smoldering-combustion of wet fuels and in fires with high organic particulate mass emissions.

■ 728

### Fate of Prions in Soil: Interactions of RecPrP with Organic Matter of Soil Aggregates as Revealed by LTA-PAS

Amaranta Pucci,\* Luigi Paolo D'Acqui, and Luca Calamai

Organic matter of soil aggregates retains RecPrP by high affinity and by modifying the wetting properties of the mineral surfaces.

■ 734

### OYE Flavoprotein Reductases Initiate the Condensation of TNT-Derived Intermediates to Secondary Diarylaminos and Nitrite

Rolf-Michael Wittich,\* Ali Haidour, Pieter Van Dillewijn, and Juan-Luis Ramos

Secondary diarylamines and nitrite are formed by the condensation of Meisenheimer dihydride complex with hydroxylaminodinitrotoluenes derived from the chemical or enzymatic reduction of 2,4,6-trinitrotoluene (TNT).

■ 740

### Impact of Black Carbon in the Extraction and Mineralization of Phenanthrene in Soil

Angela H. Rhodes, Alisdair Carlin, and Kirk T. Semple\*

The presence of black carbon is able to reduce the extraction and biodegradation of phenanthrene in soil.

■ 746

### Sequestration of Nonylphenol in Sediment from Bohai Bay, North China

Fen Jin, Jianying Hu,\* Jinlin Liu, Min Yang,\* Fu Wang, and Hong Wang

The sequestration rate of nonylphenol in a sediment core from Bohai Bay, North China is investigated by differentiating the nonextractable and extractable fractions.

■ 752

### Target Tissue Selectivity and Burdens of Diverse Classes of Brominated and Chlorinated Contaminants in Polar Bears (*Ursus maritimus*) from East Greenland

Wouter A. Gebbink, Christian Sonne, Rune Dietz, Maja Kirkegaard, Erik W. Born, Derek C.G. Muir, and Robert J. Letcher\*

The concentrations, burdens, and exposure to bioaccumulative organohalogen contaminants and degradation products is tissue and/or blood dependent in East Greenland polar bears.

■ 760

### The Release of Lead from the Reduction of Lead Oxide (PbO<sub>2</sub>) by Natural Organic Matter

Yi-Pin Lin\* and Richard L. Valentine

The reduction of PbO<sub>2</sub> by NOM causes the release of Pb(II) into water.

766

### Removal of Endosulfan and Methoxychlor from Water on Carbon Slurry

Vinod K. Gupta\* and Imran Ali

A carbon slurry is found to be the most effective treatment for the removal of endosulfan and methoxychlor from wastewater.