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Environmental Science & Technology

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Modeling the Long-Term Performance *of* WASTE Containment Systems

PFOS and Related Fluorochemicals in Human Blood from Several Countries

Reduction of Cr(VI) at a Polyaniline Film

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Research

Characterization of Natural and Affected Environments

Environmental Processes

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4557
NO_2 Emissions from Agricultural Burning in São Paulo, Brazil

Clive Oppenheimer, Vitchko I. Tsanev, Andrew G. Allen, Andrew J. S. McGonigle, Arnaldo A. Cardoso, Antony Wiatr, Willian Paterlini, and Cristine de Mello Dias

New measurements of NO_2 emissions from agricultural burning were made with compact ultraviolet spectrometers.

4562
Effect of Tides on Solute Flushing from a Strait: Imaging Flow and Transport in the East River with SF_6

Theodore Caplow, Peter Schlosser, David T. Ho, and Rica C. Enriquez

The residence time of solutes in a tidal strait that connects two large bays is revealed to be a strong function of tidal phase at time of discharge.

4572
Metabolism and Mineralization of Hexahydro-1,3,5-trinitro-1,3,5-triazine Inside Poplar Tissues (*Populus deltoides* × *nigra* DN-34)

Benoit Van Aken, Jong M. Yoon, Craig L. Just, and Jerald L. Schnoor

Poplar tissue cultures can metabolize the explosive RDX through a light-dependent multi-step process that results in a partial mineralization of the molecule.

4580
Modeling of TCE Diffusion to the Atmosphere and Distribution in Plant Stems

Xingmao Ma and Joel Burken

According to modeling and validation experiments, VOCs can diffuse and subsequently volatize to the atmosphere during phytoremediation.

4587
Reduction of Aqueous Chromate by Fe(II)/Fe(III) Carbonate Green Rust: Kinetic and Mechanistic Studies

Ludovic Legrand, Alaaeddine El Figuigui, Florence Mercier, and Annie Chausse

Reduction of aqueous chromate by carbonate green rust is investigated, and a kinetic model based on the formation of successive Cr(III) monolayers is developed.

4596
Electrokinetic Transport of PAH-Degrading Bacteria in Model Aquifers and Soil

Lukas Y. Wick, Philipp A. Mattle, Pierre Wattiau, and Hauke Harms

An investigation is presented of the mobility, viability, and activity of polycyclic aromatic hydrocarbon degrading bacteria under electrokinetic conditions applied to model aquifers and soil.

4603
Reactions of the Flavonoid Hesperetin with Chlorine: A Spectroscopic Study of the Reaction Pathways

Junhe Lu, Mark M. Benjamin, Gregory V. Korshin, and Hervé Gallard

On the basis of a combination of absorbance spectroscopy and tandem mass spectrometry, the chlorination pathways for the flavonoid hesperetin, which is a model for natural organic material, are elucidated.

4612
Emissions of Air Pollutants from Household Stoves: Honeycomb Coal versus Coal Cake

Su Ge, Xu Xu, Judith C. Chow, John Watson, Qing Sheng, Weili Liu, Zhipeng Bai, Tan Zhu, and Junfeng Zhang

Concentrations, emission rates, and factors of PM, SO_2, NO_x, benzo[a]pyrene, fluoride, and toxic elements in PM are compared; the PM elemental source profile is characterized.

Environmental Modeling

■ 4619
Adaptation of Fugacity Models to Treat Speciating Chemicals with Constant Species Concentration Ratios

Liisa K. Toose and Donald Mackay

A "multiplier" method is developed whereby existing models that describe the fate of single-species chemicals can be adapted to estimate the fate of multispecies substances.

4627
Modeling Crude Oil Droplet-Sediment Aggregation in Nearshore Waters

Michael C. Sterling, Jr., James S. Bonner, Cheryl A. Page, Christopher B. Fuller, Andrew N. S. Ernest, and Robin L. Autenrieth

A modeling approach simulates changes in particle size distribution and density due to aggregation by extending the Smoluchowski kinetic model to particles of different density.

Environmental Measurements Methods

4635
A New Method for Separating HFC-134a from Gas Mixtures Using Clathrate Hydrate Formation

Yongwon Seo, Hideo Tajima, Akihiro Yamasaki, Satoshi Takeya, Takao Ebinuma, and Fumio Kiyono

A new method that uses gas hydrate formation is proposed for separating HFC-134a from gas mixtures containing nitrogen and HFC-134a.

4640
In-Line Laser Holography and Video Analysis of Eroded Floc from Engineered and Estuarine Sediments

Rupert G. Perkins, Hongyue Sun, John Watson, Mike A. Player, Giselher Gust, and David M. Paterson

Laser holography and video analysis demonstrated that sediment erosion threshold and eroded floc size are functions of sediment biogenic polymer content and benthic algal biomass.

Remediation and Control Technologies

4649
Compositions and Sorptive Properties of Crop Residue-Derived Chars

Yuan Chun, Guangyao Sheng, Cary T. Chiou, and Baoshan Xing

The effect of charring temperature on char composition and the effect of surface acidity on the char's performance in sorption of neutral organic contaminants are evaluated.

4656
In Situ Chemical Reduction of Aquifer Sediments: Enhancement of Reactive Iron Phases and TCE Dechlorination

Jim E. Szecsody, Jonathan S. Fruchter, Mark D. Williams, Vince R. Vermeul, and Debbie Sklarew

Neutral to high pH must be maintained since reduction generates H^+; sequential extractions on reduced sediment show that adsorbed ferrous iron controls TCE reactivity.

4664
Activated Carbon and Tungsten Oxide Supported on Activated Carbon Catalysts for Toluene Catalytic Combustion

M. A. Alvarez-Merino, M. F. Ribeiro, J. M. Silva, F. Carrasco-Marín, and F. J. Maldonado-Hódar

Tungsten oxides supported on activated carbon are cheap catalysts for toluene combustion at low temperatures but need high tungsten loading and contact times.

Correspondence/Rebuttal

Additions and Corrections

■ **Supporting Information is available free of charge via the Internet at http://pubs.acs.org.**