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ENVIRONMENTAL Science & Technology

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Dry Deposition of Atmospheric MERCURY *in* Nevada

**Persistent Halogenated
Hydrocarbons in Consumer
Fish of China**

**Contaminated Salmon and
the Public's Trust**

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News and Features

NEWS

1802 Dry deposition of mercury

Measuring mercury is easiest when it's wet, but dry deposition also delivers the toxic metal to ecosystems.

1803 Mixed news on Chinese farmed fish

Although most consumer fish from China fare well in an analysis of organic pollutants, seawater farmed fish have levels high enough to raise concern.

1803-1809 News Briefs

Corn corners carbon emissions • Atrazine changes phytoplankton • Sources of mercury tied to hot spots • Conflict leaves Lebanon at risk • Doctoring U.S. climate science • Climate regulation goes corporate • Feeling the deep heat

1804 Record-high PBDEs in Chinese birds of prey

Hawks, owls, and buzzards in China are taking up very high levels of PBDE flame retardants, particularly the Deca formulation.

1805 Will REACH serve researchers' needs?

A new European chemicals law will generate \$13 billion worth of data, but not everyone is sure the database will be a treasure trove for researchers.

1806 U.S. EPA trims the public's right to know

Toxic-chemical reporting requirements are relaxed for one-third of U.S. companies, triggering congressional action.

1807 World's first low-carbon fuel provision

California regulators will design life-cycle assessment protocols to help fuel producers measure their CO₂ output from cradle to grave.

1808 U.S. EPA to revisit asbestos toxicity

Just how toxic is amphibole asbestos? That's a question EPA needs to answer for Libby, Mont., and other sites.

1809 European body for environmental chemists

The Division of Chemistry and the Environment of the European Association for Chemical and Molecular Sciences unites environmental chemists from all over Europe.

Cover: The image of scrub in the Nevada desert was provided by Fotosearch.

Online news: Read news first at <http://pubs.acs.org/estnews>.

FEATURE



1811 Contaminated Salmon and the Public's Trust

Samuel N. Luoma and Ragnar E. Löfstedt

Scientific uncertainties make it challenging for environmental policy makers to determine how to

communicate risks to the public. A constructive, holistic, multisectoral dialogue about an issue can improve understanding of uncertainties from different perspectives and clarify options for risk communication. When issues are complex, unconstructive advocacy, narrow focus, and exclusion of selected parties from decision making can erode public trust in science and lead to cynicism about the policies of government and the private sector. Luoma and Löfstedt discuss the risks involved when choosing between farmed and wild salmon as a source of human nutrition. They submit that better-justified decisions about "green" choices in food products may be a benefit of pursuing a multisectoral-type dialogue.

Research

POLICY ANALYSIS

1815

Simultaneous Assessment of Deposition Effects of Base Cations, Sulfur, and Nitrogen Using an Extended Critical Load Function for Acidification

Yu Zhao, Lei Duan, Thorjorn Larssen, Lanhua Hu, and Jiming Hao

An extended critical load function based on SSMB is developed to estimate soil acidification under variable base cation deposition in China.

CHARACTERIZATION OF NATURAL AND AFFECTED ENVIRONMENTS

1821

Persistent Halogenated Hydrocarbons in Consumer Fish of China: Regional and Global Implications for Human Exposure

Xiang-Zhou Meng, Eddy Y. Zeng, Li-Ping Yu, Bi-Xian Mai, Xiao-Jun Luo, and Yong Ran

The occurrence of persistent halogenated hydrocarbons in consumer fish of China and human exposure and health risk via fish consumption are examined.

1828

Polybrominated Diphenyl Ethers in Birds of Prey from Northern China

Da Chen, Bixian Mai, Jie Song, Quanhui Sun, Yong Luo, Xiaojun Luo, Eddy Y. Zeng, and Robert C. Hale

Supporting information is available free at <http://pubs.acs.org/est>.
This issue contains a news story about this research.

■ 1928

Sorption of Tetracycline and Chlortetracycline on K- and Ca-Saturated Soil Clays, Humic Substances, and Clay-Humic Complexes

Jutta R. V. Pils and David A. Laird

The sorption of tetracycline and chlortetracycline on clays, humic substances, and clay-humic complexes derived from two agricultural soils is studied; dilute CaCl_2 and KCl are used as background solutions.

■ 1934

Sorption and Inhibited Dehydrohalogenation of 2,2-Dichloropropane in Micropores of Dealuminated Y Zeolites

Hefa Cheng and Martin Reinhard

The dehydrohalogenation of 2,2-dichloropropane sorbed in micropores of dealuminated Y zeolites is inhibited less if the micropores are hydrophilic and more if they are hydrophobic.

■ 1942

Zn Incorporation in Hydroxy-Al- and Keggin Al_{13} -Intercalated Montmorillonite: A Powder and Polarized EXAFS Study

Michel L. Schlegel and Alain Manceau

Polarized EXAFS spectroscopy demonstrates that Zn sorbed on hydroxyl-Al- and kegginn Al_{13} -intercalated montmorillonite is eventually incorporated in gibbsitic sheets parallel to montmorillonite platelets.

ENVIRONMENTAL MEASUREMENTS METHODS

■ 1949

Noble Gas Excess Air Applied to Distinguish Groundwater Recharge Conditions

Richard G. S. Ingram, Kevin M. Hiscock, and Paul F. Dennis

Measurement of excess neon concentrations in a sandstone aquifer demonstrates that excess air may be used as an indicator of net annual groundwater recharge.

■ 1956

Measuring Air-Water Interfacial Areas with X-ray Microtomography and Interfacial Partitioning Tracer Tests

Mark L. Brusseau, Sheng Peng, Gregory Schnaar, and Asami Murao

Air-water interfacial areas are measured with microtomography and partitioning tracer tests; the specific interface domains characterized by the methods are discussed.

■ 1962

Size Distribution of Trace Organic Species Emitted from Heavy-Duty Diesel Vehicles

Sarah G. Riddle, Michael A. Robert, Chris A. Jakober, Michael P. Hannigan, and Michael J. Kleeman

Size distributions of trace organic species in diesel-engine exhaust particles are measured as a first step in quantifying diesel source contributions to airborne ultrafine ($D_p < 0.1 \mu\text{m}$) particle mass.

■ 1970

▶ Estimation of Dry Deposition of Atmospheric Mercury in Nevada by Direct and Indirect Methods

Seth N. Lyman, Mae Sexauer Gustin, Eric M. Prestbo, and Frank J. Marsik

Dry deposition of atmospheric mercury species is estimated at three sites in Nevada.

REMEDIATION AND CONTROL TECHNOLOGIES

1977

Kinetics and Mechanisms of Radiolytic Degradation of Nitrobenzene in Aqueous Solutions

Shu-Juan Zhang, Hong Jiang, Min-Jie Li, Han-Qing Yu, Hao Yin, and Qian-Rong Li

Mechanisms behind the radiolytic degradation of nitrobenzene under both oxidative and reductive conditions are proposed in light of the degradation products observed.

■ 1983

Continuous Catalytic Hydrogenation of Polyaromatic Hydrocarbon Compounds in Hydrogen-Supercritical Carbon Dioxide

Tao Yuan, Anick R. Fournier, Raymond Proudlock, and William D. Marshall

A reactor eliminates the mutagenic activities of selected PAH compounds (chrysene and benzo[a]pyrene) by hydrogenation over palladium in a hydrogen-rich atmosphere of supercritical CO_2 .

■ 1989

Precipitates on Granular Iron in Solutions Containing Calcium Carbonate with Trichloroethene and Hexavalent Chromium

Sung-Wook Jeon, John L. Jambor, David W. Blowes, and Robert W. Gillham

Mineralogical examination is conducted on the Fe^0 -bearing reactive materials derived from long-term column experiments operated under different geochemical conditions.

1995

Recycle Technology for Recovering Resources and Products from Waste Printed Circuit Boards

Jia Li, Hongzhou Lu, Jie Guo, Zhenming Xu, and Yaohe Zhou

PCBs are processed by a recycling technology of mechanical two-step crushing, corona electrostatic separation, and recovery without negative impact to the environment.

2001

Minimizing Dioxin Emissions from Integrated MSW Thermal Treatment

Wai Hung Cheung, Vinci K. C. Lee, and Gordon McKay

A novel two-stage MSW combustion process has been designed and constructed as a pilot plant facility to integrate MSW combustion with cement production.

■ 2008

Effect of Flux (Transmembrane Pressure) and Membrane Properties on Fouling and Rejection of Reverse Osmosis and Nanofiltration Membranes Treating Perfluorooctane Sulfonate Containing Wastewater

Chuyang Y. Tang, Q. Shiang Fu, Craig S. Criddle, and James O. Leckie

Membrane technology is used to remove an emerging contaminant, perfluorinated octane sulfonate; special emphasis is given to fouling and rejection mechanisms.

■ 2015

Impact of Ethanol on the Natural Attenuation of MTBE in a Normally Sulfate-Reducing Aquifer

Doug Mackay, Nick de Sieyes, Murray Einarson, Kevin Feris, Alex Pappas, Isaac Wood, Lisa Jacobson, Larry Justice, Mark Noske, John Wilson, Cherri Adair, and Kate Scow

Field experiments confirm the in situ transformation of MTBE to TBA stimulated by ethanol release to an aquifer and allow the transformation rate to be estimated.

■ Supporting information is available free at <http://pubs.acs.org/est>.
▶ This issue contains a news story about this research.

■ 2022

Adsorption of Humic Acid onto Nanoscale Zerovalent Iron and Its Effect on Arsenic Removal

Abul B. M. Giasuddin, Sushil R. Kanel, and Heechul Choi

A detailed investigation is presented of the interaction of HA and NZVI and its effect on groundwater chemistry; this is of great significance in groundwater with arsenic.

■ 2028

Evaluation of the Intrinsic Photocatalytic Oxidation Kinetics of Indoor Air Pollutants

Ignasi Salvadó-Estivill, David M. Hargreaves, and Gianluca Li Puma

Computational fluid dynamics modeling of the air flow in an integral reaction is combined with radiation field monitoring and photocatalytic reaction kinetics to yield pollutant-specific kinetic rate parameters independent of reactor geometry, radiation field, and fluid dynamics.

■ 2036

Variations in $^{13}\text{C}/^{12}\text{C}$ and D/H Enrichment Factors of Aerobic Bacterial Fuel Oxygenate Degradation

Mònica Rosell, Damià Barceló, Thore Rohwerder, Uta Breuer, Matthias Gehre, and Hans Hermann Richnow

The variability of isotope fractionation pattern upon aerobic degradation of ether oxygenates (MTBE, ETBE) by different bacterial isolates indicates the use of different degradation mechanisms.

2044

Efficient Heterogeneous Catalytic Reduction of Perchlorate in Water

Keith D. Hurley and John R. Shapley

Simple oxorhenium(VII) compounds, dispersed on a carbon support with Pd particles, form a heterogeneous catalyst that promotes transformation of perchlorate to chloride and water with hydrogen as the reducing agent.

■ 2050

Quantification and Modeling of the Elimination Behavior of Ecologically Problematic Wastewater Micropollutants by Adsorption on Powdered and Granulated Activated Carbon

Norman Nowotny, Bernhard Epp, Clemens von Sonntag, and Hans Fahlenkamp

Adsorption isotherms are determined for pharmaceuticals, X-ray contrast media, and industrial chemicals present or spiked into biologically treated wastewater, and the data are modeled.

■ 2056

Oxidation of *N*-Nitrosodimethylamine (NDMA) Precursors with Ozone and Chlorine Dioxide: Kinetics and Effect on NDMA Formation Potential

Changha Lee, Carsten Schmidt, Jeyong Yoon, and Urs von Gunten

Oxidation of NDMA precursors during water treatment is investigated with ozone and chlorine dioxide.

ECOTOXICOLOGY AND HUMAN ENVIRONMENTAL HEALTH

■ 2064

In Vitro Cytotoxicity of Silica Nanoparticles at High Concentrations Strongly Depends on the Metabolic Activity Type of the Cell Line

Jenq-Sheng Chang, Ke Liang B. Chang, Deng-Fwu Hwang, and Zwe-Ling Kong

The cytotoxicity of silica to human cells depends strongly on the metabolic activities of the cells, but it could be significantly reduced by synthesizing silica together with chitosan.

■ Supporting information is available free at <http://pubs.acs.org/est>.