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ENVIRONMENTAL Science & Technology

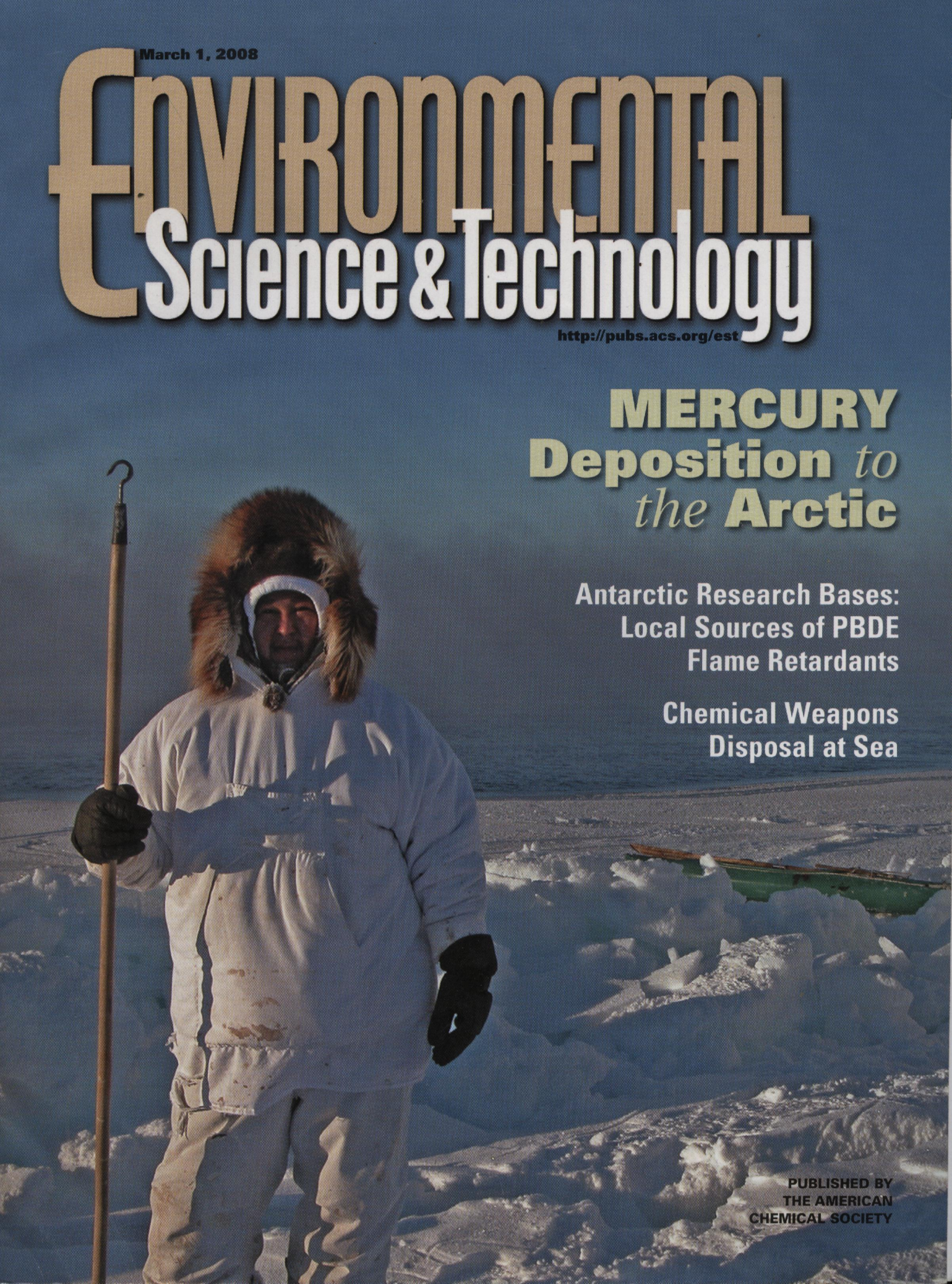
<http://pubs.acs.org/est>

MERCURY **Deposition to** *the Arctic*

**Antarctic Research Bases:
Local Sources of PBDE
Flame Retardants**

**Chemical Weapons
Disposal at Sea**

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POLICY ANALYSIS

■ 1401

► CO₂ Embodied in International Trade with Implications for Global Climate Policy

Glen P. Peters* and Edgar G. Hertwich

Globally over 5 Gt of CO₂ are embodied in international trade and this has strong implications for the participation in and effectiveness of post-Kyoto climate policy.

Research

CHARACTERIZATION OF NATURAL AND AFFECTED ENVIRONMENTS

1408

Soil CO₂ Emissions from Northern Andean Páramo Ecosystems: Effects of Fallow Agriculture

Ana Cabaneiro,* Irene Fernandez, Luis Pérez-ventura, and Tarsy Carballas

The role of páramo soils in the global terrestrial C cycle is evaluated, and changes in soil CO₂ emissions during a cultivation-fallow chronosequence are monitored.

■ 1416

Polychlorinated Biphenyls (PCBs) in Air and Seawater of the Atlantic Ocean: Sources, Trends and Processes

Rosalinda Gioia,* Luca Nizzetto, Rainer Lohmann, Jordi Dachs, Christian Temme, and Kevin C. Jones

The spatial and temporal trends and processes affecting the behavior of polychlorinated biphenyls (PCBs) in the Eastern Atlantic region are discussed.

1423

Arsenic Transformation and Mobilization from Minerals by the Arsenite Oxidizing Strain WAO

E. Danielle Rhine, Katheryn M. Onsesios, Michael E. Serfes, John R. Reinfelder, and L. Y. Young*

An autotrophic arsenite-oxidizing bacterium isolated from weathered black shale from the Newark Basin oxidizes and mobilizes arsenic in arsenopyrite (FeAsS), concurrently releasing stoichiometric amounts of sulfate and iron.

■ 1430

Molecular and Structural Characterization of Dissolved Organic Matter from the Deep Ocean by FTICR-MS, Including Hydrophilic Nitrogenous Organic Molecules

Thorsten Reemtsma,* Anja These, Michael Linscheid, Jerry Leenheer, and Alejandro Spitz

Isolates of DOM from the deep ocean contain fulvic acids known from freshwater environments and previously unknown hydrophilic acids with nitrogen incorporated into the carbon skeleton.

■ 1438

Diagnosis of Aged Prescribed Burning Plumes Impacting an Urban Area

Sangil Lee,* Hyeon K. Kim, Bo Yan, Charles E. Cobb, Chris Hennigan, Sara Nichols, Michael Chamber, Eric S. Edgerton, John J. Jansen, Yongtao Hu, Mei Zheng, Rodney J. Weber, and Armistead G. Russell

Results from this study imply that enhanced emissions during prescribed burning should be considered for assessing impacts of prescribed burning emissions on ambient air quality.

■ 1445

Halogenated Volatile Organic Compounds from the Use of Chlorine-Bleach-Containing Household Products

Mustafa Odabasi

Halogenated VOC emissions from chlorine-bleach-containing household products and their contribution to indoor air concentrations are investigated.

■ 1452

► Antarctic Research Bases: Local Sources of Polybrominated Diphenyl Ether (PBDE) Flame Retardants

Robert C. Hale,* Stacy L. Kim, Ellen Harvey, Mark J. La Guardia, T. Matt Mainor, Elizabeth O. Bush, and Elizabeth M. Jacobs

PBDE concentrations in indoor dust and wastewater sludge from two Antarctic bases are high and levels in nearby aquatic biota rival those in urbanized areas.

■ 1458

The Role of Condensed Carbonaceous Materials on the Sorption of Hydrophobic Organic Contaminants in Subsurface Sediments

Sangjo Jeong, Michelle M. Wander, Sybille Kleineidam, Peter Grathwohl, Bertrand Ligouis, and Charles J. Werth*

Results indicate kerogen and humin, not black carbon, are the dominant sorption environments for hydrophobic organic contaminants in a glacially deposited subsurface sediment.

■ 1465

Perchlorate in Groundwater: A Synoptic Survey of "Pristine" Sites in the Conterminous United States

David R. Parker,* Angelia L. Seyfferth, and Brandi Kiel Reese

Most of the 326 U.S. groundwater samples analyzed have low but measurable levels of perchlorate, furthering the case that perchlorate occurs naturally.

ENVIRONMENTAL PROCESSES

■ 1472

Assessing Dioxin Precursors in Pesticide Formulations and Environmental Samples As a Source of Octachlorodibenzo-*p*-dioxin in Soil and Sediment

Eva Holt,* Roland von der Recke, Walter Vetter, Darryl Hawker, Vincent Alberts, Bertram Kuch, Roland Weber, and Caroline Gaus

Dioxin precursors are detected in soil and sediment samples with elevated OCDD concentrations, suggesting their potential role in the contamination of environmental samples with yet unidentified dioxin patterns.

1479

Arsenic Transformation and Volatilization during Incineration of the Hyperaccumulator *Pteris vittata* L.

Xiu-Lan Yan, Tong-Bin Chen,* Xiao-Yong Liao, Ze-Chun Huang, Jia-Rong Pan, Tian-Dou Hu, Can-Jun Nie, and Hua Xie

Arsenic volatilization occurs during incineration of *Pteris vittata* and As(V) reduction catalyzed by carbon is responsible for As loss below 400 °C.

■ 1485

Experimental Studies of the Influence of Grain Size, Oxygen Availability and Organic Carbon Availability on Bioclogging in Porous Media

Victoria L. Hand, Jonathan R. Lloyd, David J. Vaughan, Michael J. Wilkins, and Stephen Boulton*

Natural subsurface laboratory simulations show that oxygen availability and grain size affect microbial bioclogging mechanisms and these effects are dependent on available dissolved organic carbon.