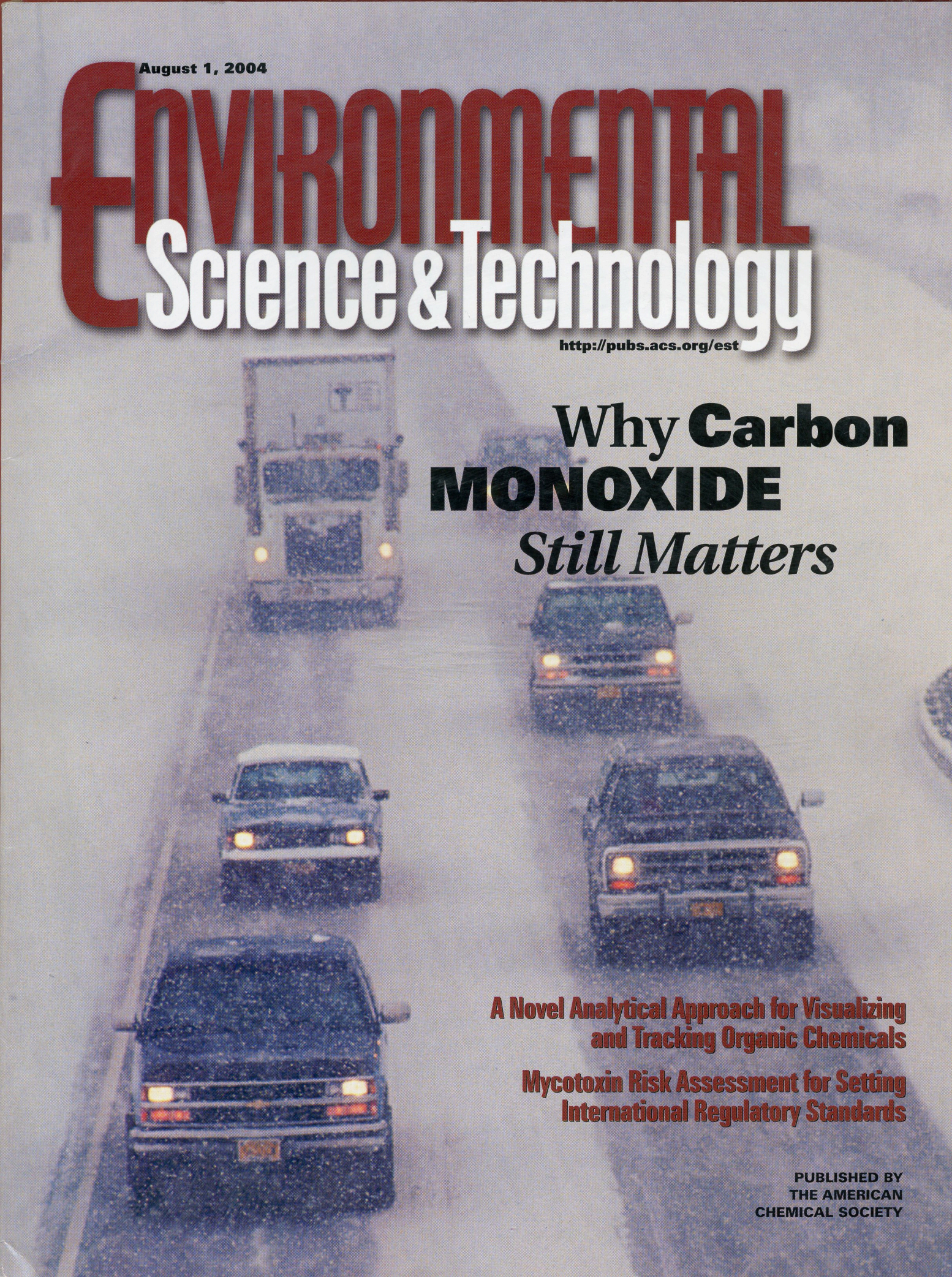


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ENVIRONMENTAL Science & Technology

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Why Carbon MONOXIDE *Still Matters*

**A Novel Analytical Approach for Visualizing
and Tracking Organic Chemicals**

**Mycotoxin Risk Assessment for Setting
International Regulatory Standards**

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Policy Analysis

4049

Mycotoxin Risk Assessment for the Purpose of Setting International Regulatory Standards

Felicia Wu

Excessively stringent standards on naturally occurring mycotoxins in food could lead to severe economic losses and even countervailing health risks in less-developed countries.

Characterization of Natural and Affected Environments

4056

Perfluorinated Compounds in Coastal Waters of Hong Kong, South China, and Korea

M. K. So, S. Taniyasu, N. Yamashita, J. P. Giesy, J. Zheng, Z. Fang, S. H. Im, and Paul K. S. Lam

Perfluorooctanesulfonate and related perfluorinated compounds are surveyed in the coastal waters of Hong Kong, South China, and Korea.

■ 4064

Detection of Perfluorooctane Surfactants in Great Lakes Water

Bryan Boulanger, John Vargo, Jerald L. Schnoor, and Keri C. Hornbuckle

Concentrations of perfluorooctane compounds (including PFOS, PFOA, and six precursors of PFOS) are reported for Lakes Erie and Ontario.

■ 4071

Brominated Organic Contaminants in the Liver and Egg of the Common Cormorants (*Phalacrocorax carbo*) from Japan

Kiyohiko Watanabe, Kurunthachalam Senthilkumar, Shigeki Masunaga, Takumi Takasuga, Naomasa Iseki, and Masatoshi Morita

Contamination profiles of PBDEs, PBBs, PBDDs, and PBDFs in the liver and egg of common cormorants from Japan are determined.

■ 4078

Sorption of Diverse Organic Vapors to Snow

Christine M. Roth, Kai-Uwe Goss, and René P. Schwarzenbach

Air/snow surface sorption coefficients for 60 compounds are presented that cover a wide range of polarity; data analysis yields a model useful as a prediction tool.

4085

Historical Record of European Emissions of Heavy Metals to the Atmosphere Since the 1650s from Alpine Snow/Ice Cores Drilled near Monte Rosa

Carlo Barbante, Margit Schwikowski, Thomas Döring, Heinz W. Gäggeler, Ulrich Schotterer, Leo Tobler, Katja Van de Velde, Christophe Ferrari, Giulio Cozzi, Andrea Turetta, Kevin Rosman, Michael Bolshov, Gabriele Capodaglio, Paolo Cescon, and Claude Boutron

Snow/ice cores obtained near Monte Rosa in the Alps reveal changes in atmospheric pollution by heavy metals in Europe since the 1650s.

4091

Are Brook Trout Streams in Western Virginia and Shenandoah National Park Recovering from Acidification?

James R. Webb, Bernard J. Cosby, Frank A. Deviney, Jr., James N. Galloway, Suzanne W. Maben, and Arthur J. Bulger

Geographic variation in response to decreasing sulfur deposition suggests that brook trout streams in the Virginia mountains may be in transition to recovery from acidification.

Environmental Processes

4097

Investigating the Molecular Interactions of Oxytetracycline in Clay and Organic Matter: Insights on Factors Affecting Its Mobility in Soil

Pankaj Kulshrestha, Rossman F. Giese, Jr., and Diana S. Aga

The mechanisms of interactions of oxytetracycline antibiotic with montmorillonite clays and organic matter at varying conditions are determined through the use of adsorption isotherms, X-ray diffraction, and FTIR analyses.

4106

Biotransformation of Tributyltin to Tin in Freshwater River-Bed Sediments Contaminated by an Organotin Release

James E. Landmeyer, Terry L. Tanner, and Bruce E. Watt

Concentrations of TBT decrease and concentrations of inorganic tin increase because of biotransformation in an impacted freshwater riverine system.

■ 4113

Photooxidation and Its Effects on the Carboxyl Content of Dissolved Organic Matter in Two Coastal Rivers in the Southeastern United States

Huixiang Xie, Oliver C. Zafiriou, Wei-Jun Cai, Richard G. Zepp, and Yongchen Wang

Photoregeneration of carboxyl on DOM is inferred from the relationships among photochemically induced O₂ consumption, CO₂ production, change of carboxyl content, and iron redox chemistry.

■ 4120

Hydration of Natural Organic Matter: Effect on Sorption of Organic Compounds by Humin and Humic Acid Fractions vs. Original Peat Material

Mikhail Borisover and Ellen R. Graber

When researchers elucidate organic compound sorption mechanisms on hydrated natural organic matter (NOM), the role of water molecules in the NOM phase should be explicitly considered.

4130

Biodegradation of Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) by *Phanerochaete chrysosporium*: New Insight into the Degradation Pathway

Diane Fournier, Annamaria Halasz, Sonia Thiboutot, Guy Ampleman, Dominic Manno, and Jalal Hawari

P. chrysosporium mineralizes HMX via initial formation of the mononitroso derivative followed by denitration or hydroxylation of one of the methylene groups prior to ring cleavage.

4134

Odorous Products of the Chlorination of Phenylalanine in Water: Formation, Evolution, and Quantification

Ingrid Freuze, Stéphan Brosillon, Dorine Herman, Alain Laplanche, Christian Démocrate, and Jacques Cavard

Amino acids chlorination leads to the formation of very odorous *N*-chloroaldimines, which remain stable enough to be present along the drinking water distribution network.

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

■ 4140

Do Arsenosugars Pose a Risk to Human Health? The Comparative Toxicities of a Trivalent and Pentavalent Arsenosugar

Paul Andrewes, David M. DeMarini, Kunihiro Funasaka, Kathleen Wallace, Vivian W. M. Lai, Hongsui Sun, William R. Cullen, and Kirk T. Kitchin

The toxicity of a trivalent arsenosugar is shown to be greater than its pentavalent form in both a DNA nicking and a cytotoxicity assay.

4149

Solar Photodecomposition of Decabromodiphenyl Ether: Products and Quantum Yield

Juan Bezares-Cruz, Chad T. Jafvert, and Inez Hua

Decabromodiphenyl ether dissolved in hexane reacts in minutes via direct solar irradiation with a quantum yield of 0.47.

■ 4157

Secondary Organic Aerosol Formation from the Ozonolysis of Cycloalkenes and Related Compounds

M. D. Keywood, V. Varutbangkul, R. Bahreini, R. C. Flagan, and J. H. Seinfeld

Secondary organic aerosol yields resulting from the ozonolysis of a series of cycloalkenes and homologous compounds are reported.

4165

Chlorophyll Fluorescence Imaging of Individual Algal Cells: Effects of Herbicide on *Spirogyra distenta* at Different Growth Stages

Ryosuke Endo and Kenji Omasa

Photosynthetic effects of an herbicide on *S. distenta* at different growth stages were analyzed with a computer-aided microscopic fluorescence imaging system.

4169

Desorption Kinetics of Phenanthrene in Aquifer Material Lacks Hysteresis

Sybille Kleineidam, Hermann Rügner, and Peter Grathwohl

No evidence for hysteresis is found during the desorption of phenanthrene from natural samples from aquifer materials previously used in long-term sorptive uptake experiments.

Environmental Modeling

■ 4176

Simulating the Influence of Snow on the Fate of Organic Compounds

Gillian L. Daly and Frank Wania

Model calculations suggest that the springtime release of contaminants from a seasonal snow cover can cause temporarily elevated concentrations in air, water, and soil.

■ 4187

Sources of Toxaphene and Other Organochlorine Pesticides in North America as Determined by Air Measurements and Potential Source Contribution Function Analyses

Eunha Hoh and Ronald A. Hites

Southern cotton farms are major sources of both toxaphene and p,p'-DDE to the northern United States; the Gulf of Mexico is not a major source.

Environmental Measurements Methods

4195

▶ **A Novel Analytical Approach for Visualizing and Tracking Organic Chemicals in Plants**

Edward Wild, John Dent, Jonathan L. Barber, Gareth O. Thomas, and Kevin C. Jones

Two-photon excitation microscopy is used to track anthracene in living plant leaves.

4200

Development and Validation of a Canister Method for Measuring Ethylene Oxide in Ambient Air

Bart M. Eklund, C. Herndon Williams, L. Wade Bontempo, Molly Isbell, and Karl R. Loos

Field studies demonstrate that the method can detect ethylene oxide, as well as benzene and toluene, in an ambient air matrix.

4206

Tire-Wear Particles as a Source of Zinc to the Environment

Terry B. Council, Kea U. Duckenfield, Edward R. Landa, and Edward Callender

Two methods assessing Zn released by tire wear show that in the mid-1990s release was of the same magnitude as Zn released from waste incineration.

Remediation and Control Technologies

■ 4215

Retention of Three Heavy Metals (Zn, Pb, and Cd) in a Calcareous Soil Controlled by the Modification of Flow with Geotextiles

L. Lassabatere, T. Winiarski, and R. Galvez-Cloutier

Modification of flow and resulting modification of heavy metals retention in a calcareous soil by the introduction of geotextiles is studied.

4222

Formation of PCDD/Fs in the Sintering Process: Influence of the Raw Materials

Céline Xhrouet and Edwin De Pauw

This research studies the influence of the raw materials (coke nature and E.S.P. dust recycling) in the sintering process on the PCDD/Fs emissions.

4227

Evaluation of Current Techniques for Isolation of Chars as Natural Adsorbents

Yuan Chun, Guangyao Sheng, and Cary T. Chiou

The potential impacts and feasibility of various soil/solid chemical-treatment steps for black carbon isolation on the char surface and adsorptive properties are evaluated.

■ 4233

Chitosan-Supported Palladium Catalyst. 5. Nitrophenol Degradation Using Palladium Supported on Hollow Chitosan Fibers

Thierry Vincent and Eric Guibal

Hollow fibers that provide increased surface area for palladium sorption are used to degrade nitrophenol with sodium formate or hydrogen gas acting as the hydrogen donor.

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

▶ This issue contains a news story about this research.