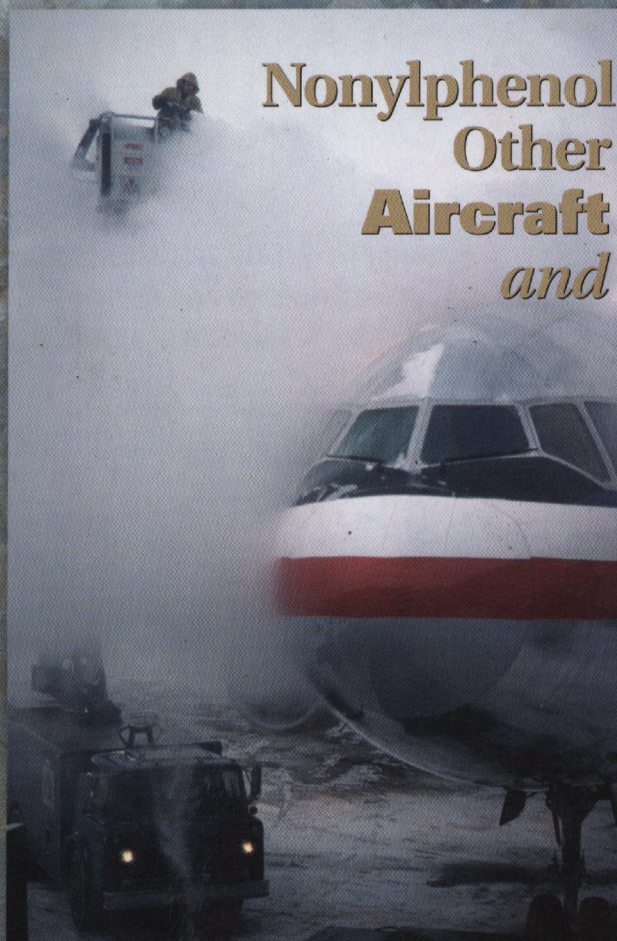


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**Nonylphenol Ethoxylates and
Other Additives in
Aircraft DEICERS, Antiicers,
and Airport Runoff**

**Isotopic and Geochemical Assessment of In Situ
Biodegradation of Chlorinated Hydrocarbons**

Airborne Brake Wear Debris

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Research

Characterization of Natural and Affected Environments

4021

Fate of Estrogens in a Municipal Sewage Treatment Plant

Henrik Andersen, Hansruedi Siegrist, Bent Halling-Sørensen, and Thomas A. Ternes

Municipal STPs with an activated sludge system for nitrification and denitrification including sludge recirculation can appreciably eliminate the natural and synthetic estrogens.

4027

Evidence for the Absence of *Staphylococcus aureus* in Land Applied Biosolids

Patricia A. Rusin, Sheri L. Maxwell, John P. Brooks, Charles P. Gerba, and Ian L. Pepper

Staphylococcus aureus were detected in raw sewage but not in treated biosolids, indicating that biosolids are not a likely source of *S. aureus* human exposure or infection.

4031

Nonylphenol Ethoxylates and Other Additives in Aircraft Deicers, Anticers, and Waters Receiving Airport Runoff

Steven R. Corsi, Daniel H. Zitomer, Jennifer A. Field, and Devon A. Cancilla

Alkylphenol ethoxylates are present in aircraft deicer and anticice formulations; nonylphenol ethoxylates and a byproduct, nonylphenol, are present in airport runoff and the receiving stream.

4038

Variable Air Temperature Response of Gas-Phase Atmospheric Polychlorinated Biphenyls near a Former Manufacturing Facility

Mark H. Hermanson, Cheryl A. Scholten, and Kevin Compher

Gas-phase PCB air concentrations and their air temperature relationships are significantly different at two sites near a former PCB manufacturing site in Anniston, AL.

4043

Biomarkers in Fish from Prince William Sound and the Gulf of Alaska: 1999–2000

Robert J. Huggett, John J. Stegeman, David S. Page, Keith R. Parker, Bruce Woodin, and John S. Brown

Biomarker studies of five nearshore and offshore species of fish caught in 1999–2000 reveal no lingering effects of the 1989 Exxon Valdez oil spill.

■ 4052

Delineation of Estuarine Management Areas Using Multivariate Geostatistics: The Case of Sado Estuary

Sandra Caeiro, Pierre Goovaerts, Marco Painho, and M. Helena Costa

This paper compares a set of multivariate geostatistical approaches to delineate spatial contiguous regions of sediment structure for Sado Estuary.

4060

Airborne Brake Wear Debris: Size Distributions, Composition, and a Comparison of Dynamometer and Vehicle Tests

Paul G. Sanders, Ning Xu, Tom M. Dalka, and M. Matti Maricq

Particle size distributions and composition data relevant to mobile emissions modeling are presented for the brake wear debris from three currently in-use brake formulations.

4070

On-Road Measurement of Particle Emission in the Exhaust Plume of a Diesel Passenger Car

Rainer Vogt, Volker Scheer, Roberto Casati, and Thorsten Benter

On-road particle size distributions are measured under real world dilution conditions in the exhaust plume of a diesel passenger car and compared to laboratory investigations.

4077

Effect of Simulated Rainfall and Weathering on Release of Preservative Elements from CCA Treated Wood

Stan Lebow, R. Sam Williams, and Patricia Lebow

Water repellent finishes reduce leaching from CCA-treated wood exposed to simulated rainfall; UV radiation increases leaching from finished and unfinished wood.

Environmental Processes

■ 4083

Arsenic Speciation and Reactivity in Poultry Litter

Yuji Arai, A. Lanzirrotti, S. Sutton, J. A. Davis, and D. L. Sparks

Microfocused XANES and SXRF analyses show that microscopic particles in poultry litter contain As(II/III and V) valence states, which are associated with metals, S, and Cl.

4091

Localization and Speciation of Chromium in Subterranean Clover Using XRF, XANES, and EPR Spectroscopy

Julie A. Howe, Richard H. Loeppert, Victoria J. DeRose, Douglas B. Hunter, and Paul M. Bertsch

Chromium is localized and the oxidation states and possible complexation modes of Cr are determined in intact subclover tissue using micro-XANES, SXRF microprobe, and EPR spectroscopy.

4098

Sorption and Dissipation of Testosterone, Estrogens, and Their Primary Transformation Products in Soils and Sediment

Linda S. Lee, Troy J. Strock, Ajit K. Sarmah, and P. Suresh C. Rao

Sorption and half-lives are measured for testosterone, 17 β -estradiol, 17 α -ethynyl estradiol, and their transformation products by direct analysis of aqueous and sorbed phase concentrations.

■ 4106

Cd Adsorption Properties of Components in Different Freshwater Surface Coatings: The Important Role of Ferromanganese Oxides

Deming Dong, Xiuyi Hua, Yu Li, Jingjing Zhang, and Dongxu Yan

For surface coatings collected in different natural waters, ferromanganese oxides contribute most to Cd adsorption with lesser roles indicated for organic phase and Al oxides.

■ 4113

Gas-Particle Partitioning of Semivolatile Organic Compounds (SOCs) on Mixtures of Aerosols in a Smog Chamber

Bharadwaj Chandramouli, Myoseon Jang, and Richard M. Kamens

The gas-particle partitioning of semivolatile organic compounds on mixtures of aerosols is studied and its sensitivity to mixture types evaluated.

4122

Sorption and Manganese-Induced Oxidative Coupling of Hydroxylated Aromatic Compounds by Natural Geosorbents

Hildegard Selig, T. Michael Keinath II, and Walter J. Weber, Jr.

The sorption and extractability of hydroxylated aromatic compounds by natural geosorbents having different organic matrices are examined, and manganese-induced sequestrative coupling is demonstrated.

4128

Dissolution of Entrapped DNAPLs in Variable Aperture Fractures: Experimental Data and Empirical Model

Sarah E. Dickson and Neil R. Thomson

Data from eight long-term dissolution experiments, performed in two laboratory-scale fractures, are used to develop an empirical model describing dissolution in single variable-aperture fractures.

4138

Biofilm Hydrous Manganese Oxyhydroxides and Metal Dynamics in Acid Rock Drainage

Elizabeth A. Haack and Lesley A. Warren

Field investigation examines biofilm hydrous manganese oxide formation and associated trace metal dynamics at temporal and diel scales in acid rock drainage-impacted streams.

4148

Assessing Influence of Experimental Parameters on Formation of PCDD/F from Ash Derived from Fires of CCA-Treated Wood

N. W. Tame, B. Z. Dlugogorski, and E. M. Kennedy

This paper investigates the formation of PCDD/F in ash from fires of wood impregnated with chromated copper arsenate.

4157

Influence of Autochthonous Dissolved Organic Carbon and Nutrient Limitation on Alachlor Biotransformation in Aerobic Aquatic Systems

Andrew P. Ensz, Charles W. Knapp, and David W. Graham

Light supply conditions and autochthonous carbon production are shown to regulate the alachlor cometabolism rate in aerobic aquatic systems by impacting nutrient supply ratios for microbial decomposition.

4163

Spectroscopic Studies of the Biosorption of Gold(III) by Dealginate Seaweed Waste

María E. Romero-González, Ceri J. Williams, Philip H. E. Gardiner, Steve J. Gurman, and Stephen Habesh

Batch isotherm experiments and surface characterization techniques have been used to elucidate gold sorption mechanisms by dealginate seaweed waste.

4170

The OH-Initiated Oxidation of Hexylene Glycol and Diacetone Alcohol

I. Magneron, V. Bossoutrot, A. Mellouki, G. Laverdet, and G. Le Bras

The rate constants and major products of the OH-initiated oxidation of hexylene glycol and diacetone alcohol, used as solvents, have been determined using both indoor and outdoor photoreactors.

4182

Comparison of Arsenic(V) and Arsenic(III) Sorption onto Iron Oxide Minerals: Implications for Arsenic Mobility

Suvasis Dixit and Janet G. Hering

Comparable sorption behavior, at circumneutral pH, for As(V) and As(III) on iron oxides suggests that arsenic would not be mobilized by As(V) reduction alone.

■ 4190

Photoformation of Low-Molecular-Weight Organic Acids from Brown Water Dissolved Organic Matter

Thomas Brinkmann, Philip Hörsch, Daniel Sartorius, and Fritz H. Frimmel

Effects of irradiation on bulk properties of bog lake water DOM and on the formation of low-molecular-weight organic acids are investigated.

Environmental Modeling

4199

Theoretically Predicted Rate Constants for Mercury Oxidation by Hydrogen Chloride in Coal Combustion Flue Gases

Jennifer Wilcox, Joe Robles, David C. J. Marsden, and Paul Blowers

This work uses high-level ab initio calculations with large basis sets to estimate oxidation rates for mercury with hydrogen chloride in combustion flue gases.

Environmental Measurements Methods

■ 4205

Isotopic and Geochemical Assessment of in Situ Biodegradation of Chlorinated Hydrocarbons

Brian C. Kirtland, C. Marjorie Aelion, Peter A. Stone, and Daniel Hunkeler

Combined in situ analysis of $\delta^{13}\text{C}$ -metabolites and ^{14}C - CO_2 indicated extensive *cis*-1,2-dichloroethylene biodegradation and complete degradation of chlorinated hydrocarbons to CO_2 in the vadose zone and groundwater.

■ 4213

Dissolved PCBs, PAHs, and HCB in Pore Waters and Overlying Waters of Contaminated Harbor Sediments

Kees Booij, José R. Hoedemaker, and Joop F. Bakker

Concentrations of hydrophobic contaminants in pore waters and overlying waters are measured using low-density polyethylene strip samplers.

Remediation and Control Technologies

4221

Inclusion of Persistent Organic Pollutants in Humification Processes: Direct Chemical Incorporation of Phenanthrene via Oxidative Coupling

Walter J. Weber, Jr. and Qingguo Huang

Observed transformations of phenanthrene in peroxidase-mediated phenol-coupling reactions suggest direct chemical incorporation of polycyclic aromatic hydrocarbons in natural and/or manipulated humification processes.

■ 4228

Dimethyl Sulfide Removal from Synthetic Waste Gas Using a Flat Poly(dimethylsiloxane)-Coated Composite Membrane Bioreactor

Inge De Bo, Jeroen Heyman, Jochen Vincke, Willy Verstraete, and Herman Van Langenhove

Membrane bioreactors are investigated for removal of dimethyl sulfide from waste gas under different conditions of inlet concentration and gas residence time.

4235

Removal of Hexavalent Chromium with a Lignocellulosic Substrate Extracted from Wheat Bran

L. Dupont and E. Guillon

The removal of hexavalent chromium with a lignocellulosic substrate investigation using XPS, IR, and X-ray absorption spectroscopies indicates a quantitative conversion of Cr(VI) into Cr(III).

4242

Formation of Methyl Nitrite and Methyl Nitrate during Plasma Treatment of Diesel Exhaust

T. J. Wallington, J. W. Hoard, M. P. Sulbaek Andersen, M. D. Hurley, Y. Nakano, and M. Kawasaki

Reaction of CH_3O radicals with NO and NO_2 is the source of CH_3ONO and CH_3ONO_2 , with a linear relationship between yields of CH_3ONO and CH_3ONO_2 .

■ 4246

Use of a Surfactant-Stabilized Emulsion To Deliver 1-Butanol for Density-Modified Displacement of Trichloroethene

C. Andrew Ramsburg, Kurt D. Pennell, Tohren C. G. Kibbey, and Kim F. Hayes

Results of batch and two-dimensional aquifer cell experiments demonstrate the efficiency of a 1-butanol macroemulsion preflow for in situ density conversion and recovery of trichloroethene—NAPL.

4254

Development of Supported Iron Oxide Catalyst for Destruction of PCDD/F

S. Lomnicki and B. Dellinger

Significant improvement of the catalytic properties of the iron oxide phase can be achieved by manipulation of the structure and coordination of iron cations.

4261

Novel Polymeric Chelating Fibers for Selective Removal of Mercury and Cesium from Water

Chunqing Liu, Yongqing Huang, Nathaniel Naismith, James Economy, and Jonathan Talbott

Two new classes of chelating fibers have been developed and are shown to be extremely efficient in removal of trace mercury and cesium from water.

4269

Use of Copper Shavings To Remove Mercury from Contaminated Groundwater or Wastewater by Amalgamation

Petra Huttenloch, Karl Ernst Roehl, and Kurt Czurda

Using copper shavings for removal of dissolved mercury from contaminated water is suggested since they efficiently remove Hg^+ from aqueous solution by forming Cu—Hg amalgams.