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The microelectronic wireless nitrate sensor network for environmental water monitoring

Manas Ranjan Gartia, Björn Braunschweig, Te-Wei Chang, Parya Moinzadeh, Barbara S. Minsker, Gul Agha, Andrzej Wieckowski, Laura L. Keefer and Gang Logan Liu*

Wireless monitoring of nitrate using an electrochemical based microsensor.

3076

Contamination, source, and input route of polycyclic aromatic hydrocarbons in historic wastewater-irrigated agricultural soils

Ning Wang, Hong-Bo Li, Jin-Lin Long, Chao Cai, Jiu-Lan Dai,* Juan Zhang and Ren-Qing Wang

Contamination by polycyclic aromatic hydrocarbons (PAHs) of historic wastewater-irrigated agricultural topsoil (0–5 cm) and the contribution of groundwater irrigation and atmospheric deposition to soil PAHs were studied in a typical agricultural region, *i.e.* Hunpu region, Liaoning, China.

3086

Optimal mapping of terrestrial gamma dose rates using geological parent material and aerogeophysical survey data

B. G. Rawlins,* C. Scheib, A. N. Tyler and D. Beamish

This optimal map of outdoor terrestrial gamma dose rate (nGy h^{-1}) across Northern Ireland combines *in situ* measurements and dose estimates from a national scale, airborne radiometric survey.

3094

Development and application of an optical sensor for ethene in ambient air using near infra-red cavity ring down spectroscopy and sample preconcentration

M. S. I. Aziz and Andrew J. Orr-Ewing*

Ethene mixing ratios have been measured in ambient air using an automated spectrometer employing diode laser cavity ring-down spectroscopy.

3101

Microscopic characterization of individual particles from multicomponent ship exhaust

Olga Popovicheva,* Elena Kireeva, Natalia Persiantseva, Mikhail Timofeev, Henrike Bladt, Natalia P. Ivleva, Reinhard Niessner and Jana Moldanová

Particles sampled from the main and auxiliary ship diesel engine exhausts during a measurement campaign aboard a cargo ship are studied by SEM, energy-dispersive X-ray microanalysis coupled by cluster analysis, and by ICP-MS, IC, FTIR and RAMAN spectroscopy.

3111

Carcinogenic potential of soils contaminated with polycyclic aromatic hydrocarbons (PAHs) in Xiamen metropolis, China

Chao Cai, Youchi Zhang, Brian J. Reid and Luis M. Nunes*

The extent of soil contamination by polycyclic aromatic hydrocarbons in the metropolitan area of Xiamen, China, were evaluated and the consequent health risks were estimated.

3118

Coupling geostatistical approaches with PCA and fuzzy optimal model (FOM) for the integrated assessment of sampling locations of water quality monitoring networks (WQMN)

Chunping Ou,* André St-Hilaire,* Taha B. M. J. Ouarda, F. Malcolm Conly, Nicole Armstrong, Bahaa Khalil and Sandra Proulx-McInnis

A comprehensive framework was presented for the optimization of sampling locations by coupling geostatistical approaches with PCA and FOM.

3129

Dynamic groundwater monitoring networks: a manageable method for reviewing sampling frequency

Magali F. Moreau-Fournier* and Christopher J. Daughney

Projection metric post-review based on the NO₃-N concentration.

3137

High-frequency phosphorus monitoring of the River Kennet, UK: are ecological problems due to intermittent sewage treatment works failures?

Michael J. Bowes,* Elizabeth J. Palmer-Felgate, Helen P. Jarvie, Matthew Loewenthal, Heather D. Wickham, Sarah A. Harman and Emily Carr

This study used high-frequency auto-analysers to simultaneously monitor total reactive phosphorus concentrations in the upper River Kennet and its main sewage works to identify sources of phosphorus concentration spikes.

3146

Optimum interpolation analysis of basin-scale ^{137}Cs transport in surface seawater in the North Pacific Ocean

Y. Inomata,* M. Aoyama, D. Tsumune, T. Motoi and H. Nakano

By optimal interpolation analysis, it appeared that ^{137}Cs from global and local fallout deposited in the 1950–60s were re-circulated in surface seawater in the North Pacific Ocean.

3156

PCDD/Fs, PBDD/Fs, and PBDEs in the air of an e-waste recycling area (Taizhou) in China: current levels, composition profiles, and potential cancer risks

Ting Zhang, Ye-Ru Huang, She-Jun Chen,* Ai-Min Liu, Peng-Jun Xu, Nan Li, Li Qi, Yue Ren, Zhi-Guang Zhou and Bi-Xian Mai

Atmospheric concentrations have declined after regulations on electronic equipment waste (e-waste) recycling but remain high compared to levels at non-e-waste locations.

3164

Trend analysis of a tropical urban river water quality in Malaysia

Faridah Othman,* Alaa Eldin M. E. and Ibrahim Mohamed

This study has established WQI trend analysis *via* a statistical approach to predict future urban river water quality in Malaysia.

3174

Absorption Ångström exponents of aerosols and light absorbing carbon (LAC) obtained from *in situ* data in Covilhã, central Portugal

S. Mogo,* V. E. Cachorro, A. de Frutos and A. Rodrigues

Wavelength dependence of the absorption coefficients of aerosols.

3182

Pollution-induced oxidative stress and biochemical parameter alterations in the blood of white stork nestlings *Ciconia ciconia* from regions with different degrees of contamination in Poland

Halyna Tkachenko and Natalia Kurhaluk*

This paper aimed to illustrate the most reliable biomarkers to detect pollution-related oxidative stress in white stork nestlings in polluted (from copper manufacture), suburban and Odra meadows areas.

3192

Arsenic speciation of geothermal waters in New Zealand

Gillian Lord, Nick Kim and Neil I. Ward*

This study presents new arsenic speciation data, collected using an in-field solid phase extraction method, for geothermal waters from the Taupo Volcanic Zone, New Zealand.

3202

Air pollution indicators predict outbreaks of asthma exacerbations among elementary school children: integration of daily environmental and school health surveillance systems in Pennsylvania

Ahmed H. YoussefAgha, Wasantha P. Jayawardene,*
David K. Lohrmann and Gamal S. El Afandi

Objectives of this study are to determine if a relationship exists between asthma exacerbations among elementary school children in industrialized countries (with climatic seasons) and exposure to daily air pollution.

3211

Metal concentrations, growth and condition indices in European juvenile flounder (*Platichthys flesus*) relative to sediment contamination levels in four Eastern English Channel estuaries

F. Henry,* I. Filipuci, G. Billon, L. Courcot, E. Kerambrun and R. Amara

The aim of the present study was to evaluate the effects of metal contamination on the biological responses of 0-group juvenile European flounder and to assess and compare the quality of four estuarine habitats located in the Eastern English Channel.

3220

Compositional properties characterizing commonly transported oils and controlling their fate in the marine environment

Jagoš R. Radović, Carmen Domínguez, Karine Laffont, Sergi Díez, James W. Readman, Joan Albaigés and Josep M. Bayona*

Oil spills relating to shipping incidents remain of substantial concern with respect to marine pollution.

3230

Sampling, extraction and measurement of bacteria, endotoxin, fungi and inflammatory potential of settling indoor dust

Anne Mette Madsen,* Christoffer B. Matthiesen, Margit W. Frederiksen, Marie Frederiksen, Mika Frankel, Michal Spilak, Lars Gunnarsen and Michael Timm

Selection of sampling device, sampling location and period are important first steps in the measurement of exposure to bioaerosols in indoor air.

3240

Mobility and storage sinks for chromium and other metals in soils impacted by leather tannery wastes

Hualin Chen,* Joselito M. Arocena, Jianbing Li, Ronald W. Thring and Jiangmin Zhou

Leather tanneries around the world, including China, introduce chromium (Cr) and other metals into the environment.

3249

Temporal trends of mercury in Greenland ringed seal populations in a warming climate

Frank Rigét,* Rune Dietz and Keith A. Hobson

Temporal trends of mercury in livers of ringed seals collected from the early 1980s to 2010 from central West, Northwest and central East Greenland were studied.

3257

Source apportionment of aerosol particles near a steel plant by electron microscopy

Martin Ebert, Dörthe Müller-Ebert, Nathalie Benker and Stephan Weinbruch *

The contribution of different sources to PM₁₀ near a large steel plant is quantified from scanning and transmission electron microscopy investigations.

3267

Nonlinearity in the relationship between bone lead concentrations and CBLI for lead smelter employees

Sepideh Behinaein,* David R. Chettle, Lesley M. Egden, Fiona E. McNeill, Geoff Norman, Norbert Richard and Susan Stever

494 smelter employees from New Brunswick participated in a bone lead survey conducted by McMaster University in 2008, using the four element "clover-leaf" geometry germanium detector system.

3276

***In vitro* assessment of the bioaccessibility of brominated flame retardants in indoor dust using a colon extended model of the human gastrointestinal tract**

Mohamed Abou-Elwafa Abdallah,* Emma Tilston, Stuart Harrad and Chris Collins

An *in vitro* colon extended physiologically based extraction test which incorporates human gastrointestinal tract parameters was applied for the first time to study the bioaccessibility of brominated flame retardants from the stomach, small intestine and colon following ingestion of indoor dust.

3284

Sampling of herbicides in streams during flood events

Jens Petersen,* Ruth Grant, Søren E. Larsen and Gitte Blicher-Mathiesen

Intensive sampling gives detailed information on amplitude, duration and synchronism of herbicide pulses occurring during floods compared to grab sampling under non-flood conditions.

PAPERS

3295

Field-deployable and near-real-time optical microfluidic biosensors for single-oocyst-level detection of *Cryptosporidium parvum* from field water samples

Scott V. Angus, Hyuck-Jin Kwon and Jeong-Yeol Yoon*

Microbead immunoagglutination assay combined with optimized Mie scatter detection in a microfluidic device enabled sub-single-oocyst-level detection of *Cryptosporidium parvum* from various field water samples (*i.e.* in the presence of contaminants), to provide a field-deployable and near-real-time alternative to laboratory-based methods.

ADDITIONS AND CORRECTIONS

3305

Additions and corrections published in 2012.

3308

Retraction published in 2012.