

Environmental digest

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PERSPECTIVE

Effective monitoring of agriculture: a response

J. D. Sachs,* R. Remans,* S. M. Smukler,* L. Winowiecki,*

S. J. Andelman, K. G. Cassman, D. Castle, R. DeFries,

G. Denning, J. Fanzo, L. E. Jackson, R. Leemans, J. Lehmann,

J. C. Milder, S. Naeem, G. Nziguheba, C. A. Palm,

P. L. Pingali, J. P. Reganold, D. D. Richter, S. J. Scherr,

J. Sircely, C. Sullivan, T. P. Tomich and P. A. Sanchez

Arsenic speciation in freshwater snails and its life cycle variation

Vivian W.-M. Lai, Katerina Kanaki, Spiros A. Pergantis, William R. Cullen* and Kenneth J. Reimer

We report on the arsenic speciation in freshwater snails from Canadian lakes, which was determined on methanol/water extracts (43–59% extraction efficiency) by using HPLC-ICP-MS and HPLC–electrospray tandem mass spectrometry.

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A comparison of data quality control protocols for atmospheric mercury speciation measurements

Alexandra Steffen, Tina Scherz, Mark Olson, David Gay and Pierrette Blanchard

We present a summary of Environment Canada's development of the RDMQ software program for TGM and atmospheric mercury species. This is followed by an overall view of the AMQC software program.

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Comparison of DNA extraction methodologies used for assessing fungal diversity *via* ITS sequencing

William R. Rittenour,* Ju-Hyeong Park, Jean M. Cox-Ganser, Donald H. Beezhold and Brett J. Green

This study demonstrates that the DNA extraction method employed for fungal ITS sequencing studies greatly influences the subsequent fungal taxa that are detected.

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Exposure assessment of tetrafluoroethylene and ammonium perfluorooctanoate 1951–2002

Anne Sleuwenhoek* and John W. Cherrie

Estimates of tetrafluoroethylene and ammonium perfluorooctanoate were used to inform an epidemiological study carried out to investigate possible risks in workers employed in the manufacture of polytetrafluoroethylene.

Chemical speciation studies on DU contaminated soils using flow field flow fractionation linked to inductively coupled plasma mass spectrometry (FIFFF-ICP-MS)

S. R. Brittain, A. G. Cox, A. D. Tomos, E. Paterson, A. Siripinyanond and C. W. McLeod*

Speciation analysis of depleted uranium (DU) contaminated soils from UK weapons testing sites was conducted using flow field flow fractionation linked with inductively coupled plasma mass spectrometry (FIFFF-ICP-MS).

Risk assessment of heavy metals in road and soil dusts within PM_{2.5}, PM₁₀ and PM₁₀₀ fractions in Dongying city, Shandong Province, China

Shaofei Kong, Bing Lu, Yaqin Ji, Xueyan Zhao, Zhipeng Bai,* Yonghai Xu, Yong Liu and Hua Jiang

Concentrations, sources and risks to human health of heavy metals were studied for road and soil dusts in PM_{2.5}, PM₁₀ and PM₁₀₀ fractions.

A 100-year sedimentary record of natural and anthropogenic impacts on a shallow eutrophic lake, Lake Chaohu, China

Fengyu Zan, Shouliang Huo,* Beidou Xi,* Chaowei Zhu, Haiqing Liao, Jingtian Zhang and Kevin M. Yeager

This study investigated a 100-year sedimentary record of natural and anthropogenic impacts on a shallow eutrophic lake, Lake Chaohu, China.

Characterization of ambient air quality during a rice straw burning episode

Yu Tai-Yi*

Spatiotemporal features of ambient air-quality during a rice straw burning episode were analyzed with cluster analysis, factor analysis and backward trajectories.

A biomonitor as a measure of an ecologically-significant fraction of metals in an industrialized harbour

Mailie L. Gall, Alistair G. B. Poore and Emma L. Johnston

The present study investigated metal contamination within a highly industrialised harbour and ecological effects on sessile invertebrates.

Differences in metal concentration by particle size in house dust and soil

Paloma I. Beamer, * Christina A. Elish, Denise J. Roe, Miranda M. Loh and David W. Layton

The aim of this work was to determine if soil and dust in the particle size fraction that adheres to hands have significantly different metal concentrations than larger particle size fractions.

Stable carbon isotope composition ($\delta^{13}\text{C}$ values) of the halogenated monoterpene MHC-1 as found in fish and seaweed from different marine regions

Natalie Rosenfelder and Walter Vetter*

The goal of this study was to isolate MHC-1 from different samples of *P. cartilagineum* and to compare the $\delta^{13}\text{C}$ values of the halogenated natural products with those of the bulk values of the seaweed from different origins.

Chemical compositions and sources of atmospheric PM_{10} in heating, non-heating and sand periods at a coal-based city in northeastern china

Shaofei Kong, Yaqin Ji, Bing Lu, Zhipeng Bai,* Li Chen, Bin Han and Zhiyong Li

Chemical compositions and sources of PM_{10} were studied for the first time in a coal-based city during different periods and in different functional zones.

Metal concentrations in the soils and native plants surrounding the old flotation tailings pond of the Copper Mining and Smelting Complex Bor (Serbia)

M. M. Antonijević, M. D. Dimitrijević,* S. M. Milić and M. M. Nujkić

Potential species for phytoextraction are *Prunus persica*, *Saponaria officinalis* and *Juglans regia* L. with BCF and TF > 1.

Concentrations of DDTs and dieldrin in Long Island Sound sediment

Lijia Yang, Xiqing Li, Pengfei Zhang, Michael E. Melcer, Youxian Wu and Urs Jans*

We demonstrate that the concentrations of dieldrin, DDT, DDE, and DDD in surficial sediments from Long Island Sound have not decreased significantly over the past twenty years.

Dietary exposure estimates of 16 polycyclic aromatic hydrocarbons (PAHs) in Xuanwei and Fuyuan, counties in a high lung cancer incidence area in China

Yanming Cai, Jungang Lv,* Wen Zhang and Linlin Zhang

Dietary polycyclic aromatic hydrocarbons exposure at sites in a high lung cancer incidence area in China are estimated to be high.

Levels and congener profiles of polybrominated diphenyl ethers (PBDEs) in primipara breast milk from Shenzhen and exposure risk for breast-fed infants

Jian Gang Zhang, Xiao Wei Sun and Hua Ai*

PBDEs body burden and EDI in Shenzhen (China) were highest in non-exposed areas in mainland China and higher than most Europe countries.

Sources and distribution of hexabromocyclododecanes (HBCDs) in Japanese river sediment

Satoshi Managaki, Iku Enomoto and Shigeki Masunaga *

The distribution of hexabromocyclododecane (HBCD) in the sediment of Japanese rivers with different characteristics (*i.e.*, population and potential source) was investigated and compared with the results estimated using a simple multimedia fate model.

Remediation of mould damaged building materials—efficiency of a broad spectrum of treatments

Mirko Peitzsch, Erica Bloom, * Rocco Haase, Aime Must and Lennart Larsson

Evaluation of mold sanitation methods with regard to mycotoxin production shows a lack of efficiency for most studied sanitation strategies.

Dynamics of toxic heavy metals in different compartments of a highly urbanized closed aquatic system

Bina Gupta, * Rahul Kumar, Manviri Rani and Tripti Agarwal

This study reports the dynamics of Cr, Ni, Cu and Pb in water, sediments, macrophytes and fish in an urban lake. Data have been subjected to multivariate statistical analysis.

Characterization and validation of a Portuguese natural reference soil to be used as substrate for ecotoxicological purposes

A. L. Caetano, * F. Gonçalves, J. P. Sousa, A. Cachada, E. Pereira, A. C. Duarte, E. Ferreira da Silva and R. Pereira

A natural soil was characterized to be used as substrate in ecotoxicological assays to reduce uncertainty of ecological risk assessments.

Multidimensional fluorescence studies of the phenolic content of dissolved organic carbon in humic substances

Todd Pagano,* Annemarie D. Ross, Joseph Chiarelli and Jonathan E. Kenny*

Parallel factor analysis (PARAFAC) was applied to multidimensional fluorescence measurements of humic samples for the determination of the phenolic content of dissolved organic carbon, showing good correlation with results from the typical wet chemistry method.

Monitoring of atmospheric nitrogen dioxide by long-path pulsed differential optical absorption spectroscopy using two different light paths

Yasuaki Kambe, Yotsumi Yoshii, Kenshi Takahashi and Kenichi Tonokura*

We measured the local distribution of atmospheric nitrogen dioxide by two long-path pulsed differential optical absorption spectroscopy systems in Tokyo.

Penetration patterns of monomeric and polymeric 1,6-hexamethylene diisocyanate monomer in human skin

Jennifer M. Thomasen and Leena A. Nylander-French*

Dermal exposure has been linked to isocyanate sensitization and asthma. We demonstrate that monomeric and polymeric 1,6-hexamethylene diisocyanates present in clearcoats used in automotive paints penetrate readily into human skin.

Speciation of mercury in the strongly polluted sediments of the Deûle River (France)

Milada Kadlecová, Baghdad Ouddane* and Hana Dočekalová

Investigation of geochemical factors affecting the speciation and the distribution of mercury in highly contaminated sediments. Transformation of inorganic mercury to methylmercury in an antagonistic environment, highly contaminated by toxic metals.

Bio-monitoring for uranium using stream-side terrestrial plants and macrophytes

E. F. Caldwell,* M. C. Duff, C. E. Ferguson, D. P. Coughlin, R. A. Hicks and E. Dixon

Vegetation as bio-monitors offers insights into the bio-availability and transport potential of uranium in the environment.

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Validation of evacuated canisters for sampling volatile organic compounds in healthcare settings

Ryan F. LeBouf,* Aleksandr B. Stefaniak and M. Abbas Virji

This work statistically validated an evacuated canister-based sampling approach for analyzing VOC exposures of mixed concentrations in health care settings.

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Impact of growth conditions on transport behavior of *E. coli*

Ian M. Marcus, Carl H. Bolster, Kimberly L. Cook, Stephen R. Opot and Sharon L. Walker*

This study examines differences in the fate and transport of eleven *E. coli* isolates grown in LB media vs. manure.

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Identification of spatiotemporal nutrient patterns in a coastal bay via an integrated *k*-means clustering and gravity model

Ni-Bin Chang,* Brent Wimberly and Zheming Xuan

This study entails how the terrestrial contribution of nutrients can be linked to the water pollution patterns in a bay area.

Airborne and allergenic fungal spores of the Karachi environment and their correlation with meteorological factors

Syed M. Hasnain,* Tasneem Akhter
and Muhammad A. Waqar

This collaborative study is the first of its kind in Pakistan using volumetric sampling and correlation with weather parameters.

Evaluation of the diffusion size classifier (meDiSC) for the real-time measurement of particle size and number concentration of nanoaerosols in the range 20–700 nm

Sébastien Bau,* Jonathan Jacoby and Olivier Witschger

Based on experimental data, a model was optimized to enlarge the meDiSC instrument's particle size range from 200 to 350 nm.

Development of a new method for the determination of residues of the neonicotinoid insecticide imidacloprid in juvenile chinook (*Oncorhynchus tshawytscha*) using ELISA detection

John A. Frew* and Christian E. Grue

This paper describes the development of a new method for quantification of Imidacloprid residues in fish tissues using ELISA detection.

Assessment of prenatal mercury exposure in a predominately Caribbean immigrant community in Brooklyn, NY

Laura A. Geer,* Malini Devi Persad, Christopher D. Palmer, Amy J. Steuerwald, Mudar Dalloul, Ovadia Abulafia and Patrick J. Parsons

This study highlights the risk for *in utero* mercury exposure in urban immigrant women predominantly from Caribbean countries. Fish consumption continues to be an important risk factor.

Use of denuder/filter apparatus to investigate terpene ozonolysis

J. R. Wells*

This chromatogram shows the presence of pinonaldehyde formed from the ozonolysis of α -pinene in gas phase and particulate phase sample collected simultaneously using a denuder/filter apparatus.

Field trials to evaluate effects of continuously planted transgenic insect-resistant cottons on soil invertebrates

Xiaogang Li, Biao Liu,* Xingxiang Wang, Zhengmin Han, Jinjie Cui and Junyu Luo

We surveyed the effects of continuously planted transgenic cottons on soil invertebrate communities under field conditions conducted over three years.

Enhancement of natural radionuclides in the surroundings of the four largest coal-fired power plants in Spain

A. Baeza, J. A. Corbacho, J. Guillén,* A. Salas, J. C. Mora, B. Robles and D. Cancio

The production of electricity in coal-fired power plants (CFPP) is considered a NORM (Naturally Occurring Radioactive Materials) activity because the coals they burn can present relatively high contents of the naturally occurring radionuclides. In this study, the main radiological impact pathways into the surrounding environments of the four largest coal-fired power plants in Spain were analyzed.

***In vitro* bioassay for reactive toxicity towards proteins implemented for water quality monitoring**

Janet Y. M. Tang,* Eva Glenn, Hanne Thoen and Beate I. Escher

A novel bioanalytical assay for reactive toxicity towards protein damage for water quality assessment.

Development of a new automated clean-up system for the simultaneous analysis of polychlorinated dibenzo-*p*-dioxins (PCDDs), dibenzofurans (PCDFs) and 'dioxin-like' polychlorinated biphenyls (dl-PCB) in flue gas emissions by GPC-SPE

Gianluca Rossetti, Silvia Mosca,* Ettore Guerriero and Mauro Rotatori

In this work the results obtained by purifying samples of flue gas emissions with an automated system, compared with the results of a traditional manual purification system are reported.

Biological monitoring of heavy metal contaminations using owls

Jungsoo Kim and Jong-Min Oh*

Lead concentrations and cadmium had the background exposure levels for wild birds. For some Eurasian Eagle Owls and Collared Scops Owls, lead concentrations were at an acute exposure level; lead concentrations were at a chronic exposure in Brown Hawk Owls. Cadmium concentrations were at a chronic exposure level in all three owl species.

Diagenesis of settling seston: identity and transformations of organic phosphorus

Kasper Reitzel,* Joakim Ahlgren, Emil Rydin, Sara Egemose, Benjamin L. Turner and Michael Hupfer

This manuscript identifies the diagenetic changes in organic P in settling seston and sediment. It is shown that certain organic P compounds reflect the increases during diagenesis and that mineralization of seston leads to formation of recalcitrant P compounds.