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**State of Fukushima nuclear fuel debris tracked by Cs137 in cooling water**

B. Grambow\* and M. Mostafavi

Irradiation enhanced interaction of Fukushima nuclear fuel with cooling water leads to continuous dissolution of 1.8% of  $^{137}\text{Cs}$  per year.

2477

**Assessing metal contamination from construction and demolition (C&D) waste used to infill wetlands: using *Deroceras reticulatum* (Mollusca: Gastropoda)**

John A. Staunton, Rory J. Mc Donnell,  
Michael J. Gormally, Chris D. Williams,  
Tiernan Henry and Liam Morrison\*

This study employs *Deroceras reticulatum* as the first biomonitor of priority pollutant metals on construction and demolition waste.

2488

**Contrasting physiological responses of ozone-tolerant *Phaseolus vulgaris* and *Nicotiana tobaccum* varieties to ozone and nitric acid**

Cara M. Stripe, Louis S. Santiago\* and Pamela E. Padgett

Plant physiological responses to nitric acid are evaluated against ozone for the first time.

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2496

**Effects of long-term land use change on dissolved carbon characteristics in the permafrost streams of northeast China**

Yuedong Guo, Changchun Song,\* Zhongmei Wan, Wenwen Tan, Yongzheng Lu and Tianhua Qiao

Permafrost soils act as large sinks of organic carbon but are highly sensitive to interference such as changes in land use, which can greatly influence dissolved carbon loads in streams.

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2507

**Surface and subsurface attenuation of trenbolone acetate metabolites and manure-derived constituents in irrigation runoff on agro-ecosystems**

Gerrad D. Jones, Peter V. Benchetler, Kenneth W. Tate and Edward P. Kolodziej\*

Although studies have evaluated the ecotoxicity and fate of trenbolone acetate (TBA) metabolites, namely 17 $\alpha$ -trenbolone (17 $\alpha$ -TBOH), 17 $\beta$ -trenbolone (17 $\beta$ -TBOH), and trendione (TBO), their environmental transport processes remain poorly characterized with little information available to guide agricultural runoff management.

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2517

**Characterisation and comparison of the uptake of ionizable and polar pesticides, pharmaceuticals and personal care products by POCIS and Chemcatchers**

S. L. Kaserzon,\* D. W. Hawker, K. Kennedy, M. Bartkow, S. Carter, K. Booij and J. F. Mueller

This study presents new data on the sampling of ionizable and polar organic chemicals of environmental relevance with POCIS and Chemcatcher.

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**Investigating the composition of dissolved organic matter in natural water in rare earth mine using EEM-PARAFAC analysis**

Yang Hongxia,\* Gao Jinxu,\* Liu Wei and Tan Keyan

Three-component DOM was identified using the EEM-PARAFAC model, showing strong correlation with the concentrations of REEs in the natural water of an ore district.

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**Direct *in situ* measurement of dissolved zinc in the presence of zinc oxide nanoparticles using anodic stripping voltammetry**

Chuanjia Jiang and Heileen Hsu-Kim\*

Anodic stripping voltammetry can be used to measure the dissolved zinc concentration in aqueous suspensions of ZnO nanoparticles with primary particle diameters of 20 nm or larger.

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**The influence of N-fertilization regimes on N<sub>2</sub>O emissions and denitrification in rain-fed cropland during the rainy season**

Zhixin Dong, Bo Zhu\* and Zebin Zeng

Crop residue combined with synthetic fertilizer is recommended as an optimal strategy for mitigating N<sub>2</sub>O emissions and denitrification-induced N loss.

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**Use of the mercury record in Red Tarn sediments to reveal air pollution history and the implications of catchment erosion**

Handong Yang\* and Peter Smyntek

Highlight Red Tarn sediments can reveal the Hg deposition history, but the record has been affected by increased catchment erosion in recent years.

2564

**Development of a decision-support tool for identifying the most suitable approach to achieve nitrate source determination**

C. Fenech, K. Nolan, L. Rock and A. Morrissey\*

A decision-support tool using IDEF0 modelling methodology was developed to differentiate point and diffuse sources of nitrate contamination. Using this tool, the environmental hazards and processes resulting from nitrate contamination can be better understood and appropriate actions for limiting the impacts of such can be taken.

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2571

**Parameterization of pharmaceutical emissions and removal rates for use in UK predictive exposure models: steroid estrogens as a case study**

J. D. Heffley, S. D. W. Comber,\* B. W. Wheeler and C. H. Redshaw

Using local population characteristics and prescription data to predict pharmaceutical concentrations in sewage influent and effluent.

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2580

**Radiocesium discharge from paddy fields with different initial scrapings for decontamination after the Fukushima Dai-ichi Nuclear Power Plant accident**

Taeko Wakahara,\* Yuich Onda, Hiroaki Kato, Aya Sakaguchi and Kazuya Yoshimura

To explore the behavior of radionuclides released after the Fukushima Dai-ichi Nuclear Power Plant (FDNPP) accident in March 2011, and the distribution of radiocesium in paddy fields, we monitored radiocesium (Cs) and suspended sediment (SS) discharge from paddy fields.

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2592

**Volatile organic compounds in Arctic snow: concentrations and implications for atmospheric processes**

Gregor Kos, Visahini Kanthasami, Nafissa Adechina and Parisa A. Ariya\*

Concurrent measurements of aromatic, oxygenated and halogenated VOC in the High-Arctic snow pack and air with solid-phase microextraction gas chromatography.

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**Nitrogen aspects of hydrological processes:  
a case study in Likeng landfill, Guangzhou, China**

Jianyao Chen,\* Aiping Zhu, Changyuan Tang, Yinglin Luo  
and Yizhang Zhang

The nitrogen aspects of hydrological processes must be determined to identify nitrogen sources and relevant mechanisms.

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**Evaluation and guidelines for using polyurethane foam (PUF) passive air samplers in double-dome chambers to assess semi-volatile organic compounds (SVOCs) in non-industrial indoor environments**

P. Bohlin,\* O. Audy, L. Škrdlíková, P. Kukučka, Š. Vojta,  
P. Příbylová, R. Prokeš, P. Čupr and J. Klánová\*

PUF passive air samplers perform well for gas phase SVOCs while they are inconsistent for particle associated SVOCs in non-industrial indoor environments.

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**Comparing new and conventional methods to estimate benthic algal biomass and composition in freshwaters**

Maria Kahlert\* and Brendan G. McKie

A first time comparison of *in situ* pigment fluorescence with conventional laboratory methods for quantifying benthic algal composition and biomass.

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**The impact of biochar on the bioaccessibility of <sup>14</sup>C-phenanthrene in aged soil**

O. U. Ogbonnaya,\* O. O. Adebisi and K. T. Semple

Biochar as a potential remedial tool to mitigate risk of phenanthrene exposure to biota.

2644

**Multi-isotope ( $^{15}\text{N}$ ,  $^{18}\text{O}$  and  $^{13}\text{C}$ ) indicators of sources and fate of nitrate in the upper stream of Chaobai River, Beijing, China**

Cai Li, Yongbin Jiang, Xinyue Guo, Yang Cao and Hongbing Ji\*

Dual isotopes of nitrate ( $^{15}\text{N}$  and  $^{18}\text{O}$ ) and carbon isotopes of dissolved inorganic carbon ( $^{13}\text{C}$ ) together with water chemistry were used to identify the sources and fate of nitrate in the upper stream of Chaobai River, north China.

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2656

**Water monitoring: automated and real time identification and classification of algae using digital microscopy**

Primo Coltelli, Laura Barsanti, Valtere Evangelista, Anna Maria Frassanito and Paolo Gualtieri\*

This paper presents an innovative system, providing a reliable, real time recognition of multi-algal samples for environmental monitoring purposes.