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**Environmental digest**

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PAPERS

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1515

**Disinfection by-product formation potentials in wastewater effluents and their reductions in a wastewater treatment plant**

Hao L. Tang, Yen-Chih Chen, John M. Regan  
and Yuefeng F. Xie\*

This study monitored DBP precursors and comparatively analyzed their removal in wastewater treatment plants.

1523

**A novel passive water sampler for *in situ* sampling of antibiotics**

Chang-Er Chen, Hao Zhang and Kevin C. Jones\*

Diffusive Gradient in Thin-films (DGT) for measuring organic chemicals, antibiotics (o-DGT), was developed and tested for freshwater.

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1531

**Recovery of sulfate saturated soils in the Plynlimon catchments, mid-Wales following reductions in atmospheric S inputs from the 1980s to 2011**

Steven Hughes,\* Brian Reynolds, David A. Norris, Sarah A. Brittain, Ashlee L. Dere, Clive Woods, Linda K. Armstrong, Sarah A. Harman and Heather D. Wickham

Plynlimon soil Bs horizons were highly saturated with sulfate in the 1980s, but comparative saturation has since fallen substantially.

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1542

**Environmental and biological monitoring of benzene in traffic policemen, police drivers and rural outdoor male workers**

Ciarrocca Manuela, Tomei Francesco, Caciari Tiziana, Capozzella Assunta, Scimitto Lara, Nardone Nadia, Andreozzi Giorgia, Scala Barbara, Fiaschetti Maria, Cetica Carlotta, Di Giorgio Valeria, Schifano Maria Pia, Tomei Gianfranco\* and Sancini Angela

This study reports results for linking ambient air levels with occupational exposure to benzene.

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1551

**Enhancement effect of two ecological earthworm species (*Eisenia foetida* and *Amyntas robustus* E. Perrier) on removal and degradation processes of soil DDT**

Zhong Lin, Xiao-min Li, Yong-tao Li,\* De-yin Huang, Jun Dong and Fang-bai Li\*

Effects of two ecological earthworm species (epigeic *Eisenia foetida* and endogeic *Amyntas robustus* E. Perrier) with different densities (15 and 30 individuals per kg of soil) on the removal of soil 1,1,1-trichloro-2,2-bis(4-chlorophenyl)ethane (DDT) with two pollution levels (2 and 4 mg kg<sup>-1</sup>) were investigated.

1559

**Chromium fractionation and speciation in natural waters**

Catarinie Diniz Pereira, João Gabriel Techy,  
Edgard Moreira Ganzarolli and Sueli Pércio Quináia\*

A study on chromium partitioning and speciation, with determination at trace levels, was carried out in a potentially contaminated creek.

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1565

**Development of low-cost ammonia gas sensors and data analysis algorithms to implement a monitoring grid of urban environmental pollutants**

Maria Chiesa, Federica Rigoni, Maria Paderno,  
Patrizia Borghetti, Giovanna Gagliotti, Maurizio Bertoni,  
Antonio Ballarin Denti, Lorenzo Schiavina, Andrea Goldoni  
and Luigi Sangaletti\*

We developed low-cost, sub-ppm, ammonia gas sensors based on CNTs, to be used in a diffuse urban air monitoring grid.

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1576

**Field-scale monitoring of the long-term impact and sustainability of drainage water reuse on the west side of California's San Joaquin Valley**

Dennis L. Corwin\*

Long-term, field-scale assessment of the sustainability of drainage water reuse as an alternative irrigation water source for non-productive saline-sodic soil.

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1597

**Adsorption of the antiepileptic carbamazepine onto agricultural soils**

Vania Calisto and Valdemar I. Esteves\*

The common use of effluents for crop irrigation and application of sludge may be a potential source of carbamazepine into adjacent surface and ground waters by leaching.

1604

**Plutonium in the WIPP environment: its detection, distribution and behavior**

P. Thakur, S. Ballard\* and R. Nelson\*

The Waste Isolation Pilot Plant (WIPP) is a deep underground geologic nuclear repository for the safe disposal of transuranic (TRU) wastes generated from the US defense program. In this article, the detection, distribution and behavior of plutonium in the WIPP environment are discussed.

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1616

**Antibiotic resistance profile of bacterial isolates from animal farming aquatic environments and meats in a peri-urban community in Daejeon, Korea**

Hyunjin Rho, Bongjin Shin, Okbok Lee, Yu-Hyun Choi, Jaerang Rho\* and Jiyoung Lee\*

The increasing usage of antibiotics in the animal farming industry is an emerging worldwide problem contributing to the development of antibiotic resistance.

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1622

**Lead traceability along soil-melliferous flora-bee family-apiary products chain**

Anca Mihaly Cozmuta,\* Laura Bretan, Leonard Mihaly Cozmuta, Camelia Nicula and Anca Peter

The risk factor parameter that allows the prediction of the most or least impacted month of the melliferous season.

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1631

**Internally controlled PCR system for detection of airborne microorganisms**

Evgeny V. Usachev and Igor E. Agranovski\*

We report the development of an internally controlled PCR system for detection of airborne microorganisms.

1638

**Effects of anticholinesterase drugs on biomarkers and behavior of pumpkinseed, *Lepomis gibbosus* (Linnaeus, 1758)**

Sara Rodrigues, Sara C. Antunes,\* Fátima P. Brandão, Bruno B. Castro, Fernando Gonçalves and Bruno Nunes\*

The presence of pharmaceutical residues in the aquatic environment has recently received great attention, as potential adverse effects may arise from their presence.

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1645

**Distribution and risk assessment of organochlorine contaminants in surface water from River Chenab, Pakistan**

Syed Ali-Musstjab-Akber-Shah Eqani, Riffat Naseem Malik,\* Athanasios Katsoyiannis, Gan Zhang, Paromita Chakraborty, Ashiq Mohammad and Kevin C. Jones

First study to report globally banned chemicals in River Chenab, Pakistan; important river in Asia, associated with >100 million inhabitants.

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1655

**Assessing the impact of chloroacetanilide herbicides and their metabolites on periphyton in the Leyre River (SW France) via short term growth inhibition tests on autochthonous diatoms**

Vincent Roubex,\* Vincent Fauvelle, Juliette Tison-Rosebery, Nicolas Mazzella, Michel Coste and François Delmas

Higher tolerance of a downstream diatom population to acetochlor reflects a chronic exposure to low concentrations of the toxicant.

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1664

**Polychlorinated biphenyls (PCBs) analysis using a miniaturized high-resolution time-of-flight mass spectrometer "MULTUM-S II"**

Shuichi Shimma,\* Shinichi Miki and Michisato Toyoda

In this study, we conducted polychlorinated biphenyls analysis using fast gas chromatography/high-resolution mass spectrometry using a miniature mass spectrometer.

1671

**Source apportionment in oil spill remediation**

Jorge Muñoz, Stephen M. Mudge,\*  
Rodrigo Loyola-Sepulveda, Gonzalo Muñoz  
and Claudio Bravo-Linares

It is possible to distinguish between multiple oil spills through chemometric analysis of the biomarkers of the target oils.

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1677

**Combined toxicity of three chlorophenols 2,4-dichlorophenol, 2,4,6-trichlorophenol and pentachlorophenol to *Daphnia magna***

Liqun Xing, Jie Sun, Hongling Liu\* and Hongxia Yu\*

Response surface models for binary mixtures were established and various prediction models were used to predict toxicity of the mixtures.

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1684

**Insights into ozone deposition patterns from decade-long ozone flux measurements over a mixed temperate forest**

J. Neiryneck,\* B. Gielen, I. A. Janssens and R. Ceulemans

Long-term fluxes of ozone (O<sub>3</sub>) were measured over a mixed temperate forest using the aerodynamic gradient method.

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1696

**Monitoring of ozone effects on the vitality and increment of Norway spruce and European beech in the Central European forests**

Vít Šrámek,\* Radek Novotný, Monika Vejpustková,  
Iva Hůnová and Hana Uhlířová

Ozone concentration and the AOT40 exposure index has been analyzed in 48 Norway spruce and European beech stands to find the ozone influence on radial growth and defoliation.

1703

**Errors in ozone risk assessment using standard conditions for converting ozone concentrations obtained by passive samplers in mountain regions**

G. Gerosa,\* A. Finco, R. Marzuoli, M. Ferretti and E. Gottardini

The blanket application of a standard conversion factor may lead to substantial errors in reporting and mapping ozone concentrations and therefore in assessing potential ozone risk in mountain regions.

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1710

**Monitoring of ozone in selected forest ecosystems in Southern Carpathian and Romanian Intensive Monitoring Network (level II)**

Diana Silaghi\* and Ovidiu Badea\*

Measurements of ozone concentrations using passive samplers in different monitoring networks in Romania.