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### **Environmental digest**

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### CRITICAL REVIEW

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1305

### **Designing an integrated environmental monitoring plan for land-based marine fish farms located at exposed and hard bottom coastal areas**

C. Carballeira,\* J. Ramos-Gómez, M. L. Martín-Díaz,  
T. A. DelValls and A. Carballeira

The increase in land-based marine aquaculture in the past few decades has not been accompanied by a corresponding increase in environmental controls and regulations; an environmental monitoring plan is proposed.

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1317

**Radioactive fallout in the United States due to the Fukushima nuclear plant accident**

P. Thakur, S. Ballard and R. Nelson

The trace levels of radioactivity in air, water, and milk samples collected across the United States between March 17 to April 4, 2011, from the damaged Fukushima Daiichi nuclear power plant, Japan, are discussed.

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1325

**Gene-TEQ—a standardized comparative assessment of effects in the comet assay using genotoxicity equivalents**

Christopher Faßbender,\* Thomas Braunbeck and Steffen H. Keiter

The aim of the present study was to improve the comparability of results in genotoxicity assessment of complex environmental samples. The concept of toxicity equivalents has been implemented for the comet assay with the rainbow trout liver cell line RTL-W1.

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1335

**Long-term fate of polycyclic aromatic hydrocarbons (PAH) in sediments from Loch Leven after closure of an aluminium smelter**

A. D. McIntosh, R. J. Fryer, L. Webster\* and A. B. Cundy

An aluminium smelter discharged polycyclic aromatic hydrocarbons (PAHs) into Loch Leven on the west of Scotland from 1907 until it closed in 2000, resulting in elevated PAH concentrations in the sediment.

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1345

**Sensitive immunoassay detection of multiple environmental chemicals on protein microarrays using DNA/dye conjugate as a fluorescent label**

Ziyan Fan, Young Soo Keum, Qing X. Li, Weilin L. Shelver and Liang-Hong Guo\*

Immunoassays for BDE-47, benzo[a]pyrene and estradiol on protein microarrays were developed using a DNA/dye conjugate as a high-signal fluorescent label.

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**Endocrine disrupting chemicals in New Orleans surface waters and Mississippi Sound sediments**

Guangdi Wang, \* Peng Ma, Qiang Zhang, John Lewis, Michelle Lacey, Yoko Furukawa, S. E. O'Reilly, Shelley Meaux, John McLachlan and Shaoyuan Zhang

Endocrine disrupting chemicals are found widely distributed in sediments from the Gulf of Mexico.

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**Seasonal variation, sources, and gas/particle concentrations of PCBs and OCPs at high altitude suburban site in Western Black Sea Region of Turkey**

Serpil Yenisoy-Karakaş, \* Muhammed Öz and Eftade O. Gaga

Endrin concentrations were 10–50 fold higher than the literature values and local sources for OCPs and fugitive emissions for PCBs were the dominant sources rather than the long range transport.

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**Ecological risk assessment of perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) in marine environment using *Isochrysis galbana*, *Paracentrotus lividus*, *Siriella armata* and *Psetta maxima***

Lazhar Mhadhbi, \* Diego Rial, Sara Pérez and Ricardo Beiras

PFOS was toxic for fish larvae at 30 µg L<sup>-1</sup>, two orders of magnitude below the toxicity thresholds for invertebrates and algae.

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***In situ* phytoremediation of a soil historically contaminated by metals, hydrocarbons and polychlorobiphenyls**

S. Doni, \* C. Macci, E. Peruzzi, M. Arenella, B. Ceccanti and G. Masciandaro

This study investigated at real-scale the efficiency of plants (*Populus nigra*) and horse manure in bioremediating and functionally recovering a soil contaminated by metals, hydrocarbons and polychlorobiphenyls.

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1391

**Impact of wastewater treatment plant discharge of lidocaine, tramadol, venlafaxine and their metabolites on the quality of surface waters and groundwater**

Paola C. Rúa-Gómez\* and Wilhelm Püttmann

The occurrence of lidocaine, tramadol, venlafaxine and their metabolites in different surface waters and groundwater was analyzed.

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1400

**Assessment of particulate matter in the urban atmosphere: size distribution, metal composition and source characterization using principal component analysis**

Burcu Onat,\* Ülkü Alver Şahin and Cuma Bayat

A differential size distribution showed that the fine particles (< 3.3 µm) has constituted the significant part of TSP at Göztepe site and Yenibosna site.

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1410

**Do national advisories serve local consumers: an assessment of mercury in economically important North Carolina fish**

Sally Jane Petre,\* Dana K. Sackett and D. Derek Aday

National and regional fish consumption guidelines may not be the best sources of contaminant information for local fish consumers.

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1417

**Development and preparation of lead-containing paint films and diagnostic test materials**

David Binstock,\* William Gutknecht, Kristen Sorrell, Curtis Haas, Wayne Winstead, Michelle McCombs, Gordon Brown, Cynthia Salmons and Sharon L. Harper

A procedure for preparing paint testing materials having controlled variations in substrate, lead form, layers, and potential analytical method interferences.

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1428

**Effectiveness of three configurations of membrane bioreactors on the removal of priority and emergent organic compounds from wastewater: comparison with conventional wastewater treatments**

D. Camacho-Muñoz, J. Martín, J. L. Santos,\* E. Alonso, I. Aparicio, T. De la Torre, C. Rodriguez and J. J. Malfeito

Levels and efficiency of removal of priority and emergent pollutants in membrane bioreactors. Comparison with efficiency achieved in conventional wastewater treatments.

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1437

**Hydrology-linked spatial distribution of pesticides in a fjord system in Greenland**

Pernilla Carlsson, Gerard Cornelissen, Carl Egede Bøggild, Søren Rysgaard, John Mortensen and Roland Kallenborn\*

This is a pilot study regarding pesticide distribution and pesticides linked to fresh-water sources in a sub-Arctic fjord system.

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1444

**Analysis of the usefulness of biological parameters for the control of activated sludge wastewater treatment plants in an interlaboratory study context**

Lucía Arregui,\* Raquel Liébana, Eva Rodríguez, Antonio Murciano, Francisco Conejero, Blanca Pérez-Uz and Susana Serrano

This work is an interlaboratory assessment necessary to develop reliable protocols to use protists as bioindicators of WWTP performance.

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1453

**Prioritizing GM crop monitoring sites in the dynamics of cultivation systems and their environment**

Claudia Bethwell, Hans-Jürgen Müller, Frank Eulenstein and Frieder Graef\*

We developed a systematic approach to prioritise GM crop monitoring sites based on assessing the exposure intensity. We used Bt-maize as a scenario and determined the exposure intensity and temporal frequency of fields and patches.

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1462

**Mobile monitoring along a street canyon and stationary forest air monitoring of formaldehyde by means of a micro-gas analysis system**

Kei Toda,\* Wataru Tokunaga, Yosuke Gushiken, Kazutoshi Hirota, Teppei Nose, Daisaku Suda, Jun Nagai and Shin-Ichi Ohira

A portable and highly sensitive device was developed to monitor harmful atmospheric compound formaldehyde to perform mobile monitoring along a street canyon and forest. Production and loss of HCHO is discussed from the obtained data.

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1473

**Chironomid mouthpart deformities as indicator of environmental quality: a case study in Lake Trasimeno (Italy)**

Alessandra Di Veroli, Roberta Selvaggi and Enzo Goretti\*

The aim of the present study was to monitor mouthpart deformities of *Chironomus plumosus* (Insecta-Diptera) in Lake Trasimeno (2000–2010) in relation with sediment contamination by heavy metals, which is one of the main causes of deformity induction.

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1479

**Acidification in Arabian Gulf – Insights from pH and temperature measurements**

S. Uddin,\* B. Gevao, A. N. Al-Ghadban, M. Nithyanandan and D. Al-Shamroukh

*In situ* measurements of temperature and pH from the Arabian Gulf, highlighting acidification in gulf waters.

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1483

**Aerosol residence times and changes in radioiodine-<sup>131</sup>I and radiocaesium-<sup>137</sup>Cs activity over Central Poland after the Fukushima-Daiichi nuclear reactor accident**

Magdalena Długosz-Lisiecka\* and Henryk Bem

A radioactive plum, passed over Europe two weeks after the Fukushima-Daiichi nuclear reactor accident caused a temporal increase in the observed <sup>131</sup>I and <sup>137</sup>Cs in the air over Poland.