

# Hazard Assessment and Control of Environmental Contaminants (Ecohazard'99)

Selected Proceedings of the 3rd IAWQ Specialised Conference on Hazard  
Assessment and Control of Environmental Contaminants, held in Otsu City,  
Shiga, Japan, 5-8 December 1999

**Issue Editors: S Matsui and Y Shimizu**

Research Centre for Environmental Quality Control (RCEQC)  
Kyoto University, Otsu City, Shiga, Japan

***m***  
**Publishing**

# Contents

## Detection of endocrine disruptors

- 1 **Vitellogenin as a biomarker for environmental estrogens**  
P.D. Jones, W.M. De Coen, L. Tremblay and J.P. Giesy
- 15 **Estrogenic metabolites of alkylphenol polyethoxylates in secondary sewage effluents and rivers** M. Ahel, E. Molnar, S. Ibric and W. Giger
- 23 **Behaviour of nonylphenol ethoxylates in sewage treatment plants in Japan - biotransformation and ecotoxicity**  
M. Fujita, M. Ike, K. Mori, H. Kaku, Y. Sakaguchi, M. Asano, H. Maki and T. Nishihara
- 31 **Biodegradation of bisphenol A in the aquatic environment** M. Ike, C.S. Jin and M. Fujita
- 39 **Distribution of endocrine disrupting semivolatile organic compounds in several compartments of a terrestrial ecosystem** G. Streck and R. Herrmann
- 45 **The fate and behaviour of human estrogens in a night soil treatment process**  
H. Takigami, N. Taniguchi, T. Matsuda, M. Yamada, Y. Shimizu and S. Matsui
- 53 **Evaluation of reproductivity of medaka (*Oryzias latipes*) exposed to chemicals using a 2-week reproduction test** T. Shioda and M. Wakabayashi
- 61 **Evaluating variation of estrogenic effect by drinking water chlorination with the MVLN assay** S. Itoh, H. Ueda, T. Nagasaka, G. Nakanishi and H. Sumitomo
- 71 **Occurrence of butyltin compounds in mussels from Indonesian coastal waters and some Asian countries** A. Sudaryanto, S. Takahashi, S. Tanabe, M. Muchtar and H. Razak
- 81 **Development of the ELISAs for detection of hormone-disrupting chemicals**  
Y. Goda, A. Kobayashi, K. Fukuda, S. Fujimoto, M. Ike and M. Fujita
- 89 **Enzymatic degradation of alkylphenols, bisphenol A, synthetic estrogen and phthalic ester** T. Tanaka, K. Yamada, T. Tonosaki, T. Konishi, H. Goto and M. Taniguchi
- 97 **Accumulation of butyltin compounds and total tin in marine mammals**  
S. Takahashi, L. T. H. Le, H. Saeki, N. Nakatani, S. Tanabe, N. Miyazaki and Y. Fujise

## Detection of Genotoxic Contaminants

- 109 **Development of quantitative comparative cytotoxicity and genotoxicity assays for environmental hazardous chemicals**  
M.J. Plewa, Y. Kargalioglu, D. Vanker, R.A. Minear and E.D. Wagner
- 117 **Detection and origin of 3-chloro-4-dichloromethyl-5-hydroxy-2(5H)furanone (MX) in river water** N. Kinae, J. Tanaka, N. Kamio, C. Sugiyama, M. Furugori, K. Shimoi and K. Tanji
- 125 **Genotoxicity analysis and hazardousness prioritization of a group of chemicals**  
E. Degirmenci, Y. Ono, O. Kawara and H. Utsumi
- 133 **A novel method of analyzing environmental chemical mutagens in human cell systems** S. Takahashi, X.J. Chi, J. Nomura, S. Sugaya, K. Kita and N. Suzuki

## Heavy metal and radionuclide contamination

- 139 **Understanding Minamata disease and strategies to prevent further environmental contamination by methylmercury** Y. Takizawa
- 147 **Recent epidemic-logical studies on itai-itai disease as a chronic cadmium poisoning in Japan** M. Kasuya

- 155 **Flow, stock and destination of radioactive fallout Cs-137 in the global environment**  
S. Morisawa, Y. Shimada and M. Yoneda
- 163 **Global transport rates and future prediction of hazardous materials: Pu and Cs - from Nagasaki to Canadian Arctic**  
A. Kudo, J. Zheng, R. Yamada, G. Tao, T. Sasaki and M. Sugahara
- 171 **Sources, trends, implications and remediation of mercury contamination of lakes in remote areas of Canada** L. Trip and R.J.Allan
- 177 **History of mercury migration from Minamata Bay to the Yatsushiro Sea** A. Kudo, Y. Fujikawa, M. Mitui, M. Sugahara, G. Tao, J. Zheng, T. Sasaki, S. Miyahara and T. Muramatsu
- 185 **Assessment of arsenic contamination in soils and waters in some areas of Bangladesh**  
M.B. Alam and M.A. Sattar
- 193 **Multivariate analyses on heavy metal binding fractions of river sediments in Southern Taiwan** K.C. Yu, C.Y. Chang, L.J. Tsai and S.T. Ho
- 201 **Characterization of heavy metals and polycyclic aromatic hydrocarbons in urban highway runoff** M. Shinya, T. Tsuchinaga, M. Kitano, Y. Yamada and M. Ishikawa
- 209 **Measuring heavy metals by quantitative thermal vaporization**  
C. Ludwig, A.J. Schuler, J. Wochele and S. Stucki

### PCDDs, PCBs and organochlorine contamination

- 217 **Fate of pesticides in a shallow reservoir** N. Itagaki, O. Nagafuchi, K. Takimoto and M. Okada
- 223 **Persistent organochlorine pesticides and polychlorinated biphenyls in some agricultural and industrial areas in Northern Vietnam**  
P.H. Viet, P.M. Hoai, N.H. Minh, N.T. Ngoc and P.T. Hung
- 231 **Recent contamination of persistent chlorinated endocrine disrupters in cetaceans from the North Pacific and Asian coastal waters** T.B. Minh, M.S. Prudente, M. Watanabe, S. Tanabe, H. Nakata, N. Miyazaki, T.A. Jefferson and A. Subramanian
- 241 **Organochlorine contamination in fish and mussels from Cambodia and other Asian countries** I. Monirith, H. Nakata, M. Watanabe, S. Takahashi, S. Tanabe and T.S. Tana
- 253 **Heterogeneous and homogeneous photocatalytic degradation of chlorophenols in aqueous titanium dioxide and ferrous ion** R-A. Doong, R.A. Maithreepala and S-M. Chang
- 261 **Cloning and expression of DL-2-haloacid dehalogenase gene from *Burkholderia cepacia***  
Y. Ohkouchi, H. Koshikawa and Y. Terashima

### Ecological toxicity assessment

- 269 **Bioassay for chemical toxicity using yeast *Saccharomyces cerevisiae***  
H. Iwahashi, K. Fujita and Y. Takahashi
- 277 **Cytotoxicity evaluation of chemicals using cultured fish cells** M. Mori and M. Wakabayashi
- 283 **Optimization of sol-gel based fibre-optic cholinesterase biosensor for the determination of organophosphorus pesticides** H-C. Tsai and R-A. Doong
- 291 **Effects of inoculum's mean cell volume on algal toxicity tests** M-R. Chao and C-Y. Chen
- 297 **Embryonic development assay with *Daphnia magna*: application to toxicity of chlorophenols** T. Abe, H. Saito, Y. Niikura, T. Shigeoka and Y. Nakano

### Environmental risk assessment

- 305 **An example of an integrated approach for health and environmental risk assessment: the case of organotin compounds** J. Sekizawa, G. Suter, T. Vermeire and W. Munns

### Hazardous contaminants in wastewaters

- 315 **Novel aspects for management of xenobiotic compounds in wastewater treatment plants - linking theory, field studies, regulation, engineering, and experience** B.N. Jacobsen and T. Guilda
- 323 **Organic compounds in municipal landfill leachates** N. Paxeus

### **Physico-chemical treatment of hazardous contaminants**

- 335 **Removal of heavy metal from soil and groundwater by *in-situ* electrokinetic remediation** S. Shiba, S. Hino, Y. Hirata and T. Seno
- 345 **Copper removal by polymer immobilised *Rhizopus oryzae***  
M.S. Al-Hakawati and C.J. Banks
- 363 **The effects of the co-existing compounds on the decomposition of micropollutants using the ozone/hydrogen peroxide process**  
K. Kosaka, H. Yamada, S. Matsui and K. Shishida
- 363 **Supercritical water oxidation of sludges contaminated with toxic organic chemicals**  
N. Crain, A. Shanableh, and E. Gloyna

### **Biological treatment of environmental contaminants**

- 369 **Biological treatment of mineral oil in a salty environment** L. Yang and C-T. Lai
- 377 **Biodegradation of household chemicals in river water under untreated discharge conditions** C-G. Peng, T. Arakaki, K. Jung and E. Namkung

### **Advanced analytical method**

- 383 **The fractionation/concentration of aquatic humic substances by the sequential membrane system and their characterization with mass spectrometry**  
K. Ikeda, R. Arimura, S. Echigo, Y. Shimizu, R.A. Minear and S. Matsui
- 391 **Surfactants - standard determination methods in comparison with substance specific mass spectrometric methods and toxicity testing by *Daphnia magna* and *Vibrio fischeri*** H-Q. Li and H.F. Schroder