

Environmental Science and Pollution Research

Volume 22 • Number 21 • November 2015

Special Issue: *Danio rerio* as a Model in Aquatic Toxicology and Sediment Research

Guest Editors: Henner Hollert, Steffen Keiter

EDITORIAL

***Danio rerio* as a model in aquatic toxicology and sediment research**

H. Hollert · S.H. Keiter 16243

DANIO RERIO AS A MODEL IN AQUATIC TOXICOLOGY AND SEDIMENT RESEARCH

The fish embryo test (FET): origin, applications, and future

T. Braunbeck · B. Kais · E. Lammer · J. Otte · K. Schneider · D. Stengel · R. Strecker 16247

Zebrafish as a model to study the role of DNA methylation in environmental toxicology

J.H. Kamstra · P. Aleström · J.M. Kooter · J. Legler 16262

Comparability of behavioural assays using zebrafish larvae to assess neurotoxicity

J. Legradi · N. el Abdellaoui · M. van Pomerén · J. Legler 16277

Bioaccumulation and molecular effects of sediment-bound metals in zebrafish embryos

R. Redelstein · H. Zielke · D. Spira · U. Feiler · L. Erdinger · H. Zimmer · S. Wiseman · M. Hecker · J.P. Giesy · T.-B. Seiler · H. Hollert 16290

A novel contact assay for testing aryl hydrocarbon receptor (AHR)-mediated toxicity of chemicals and whole sediments in zebrafish (*Danio rerio*) embryos

S. Schiwy · J. Bräunig · H. Alert · H. Hollert · S.H. Keiter 16305

Time-dependent expression and activity of cytochrome P450 1s in early life-stages of the zebrafish (*Danio rerio*)

J. Bräunig · S. Schiwy · O. Broedel · Y. Müller · M. Frohme · H. Hollert · S.H. Keiter 16319

Acetylcholinesterase in zebrafish embryos as a tool to identify neurotoxic effects in sediments

B. Kais · D. Stengel · A. Batel · T. Braunbeck 16329

Erratum to: Acetylcholinesterase in zebrafish embryos as a tool to identify neurotoxic effects in sediments

B. Kais · D. Stengel · A. Batel · T. Braunbeck 16340

Genotoxic and teratogenic effect of freshwater sediment samples from the Rhine and Elbe River (Germany) in zebrafish embryo using a multi-endpoint testing strategy

M. Garcia-Käufer · S. Gartiser · C. Hafner · S. Schiwy · S. Keiter · C. Gründemann · H. Hollert 16341

Investigations on sediment toxicity of German rivers applying a standardized bioassay battery

C. Hafner · S. Gartiser · M. Garcia-Käufer · S. Schiwy · C. Hercher · W. Meyer · C. Achten · M. Larsson · M. Engwall · S. Keiter · H. Hollert 16358

Exposures of zebrafish through diet to three environmentally relevant mixtures of PAHs produce behavioral disruptions in unexposed F1 and F2 descendant

C. Vignet · L. Joassard · L. Lyphout · T. Guionnet · M. Goubeau · K. Le Menach · F. Brion · O. Kah · B.-C. Chung · H. Budzinski · M.-L. Bégout · X. Cousin 16371

Fold-change threshold screening: a robust algorithm to unmask hidden gene expression patterns in noisy aggregated transcriptome data

J. Hausen · J.C. Otte · U. Strähle · M. Hammers-Wirtz · H. Hollert · S.H. Keiter · R. Ottermanns 16384

BFCOD activity in fish cell lines and zebrafish embryos and its modulation by chemical ligands of human aryl hydrocarbon and nuclear receptors

N. Creusot · F. Brion · B. Piccini · H. Budzinski · J.M. Porcher · S. Ait-Aissa 16393

Fish embryo tests with *Danio rerio* as a tool to evaluate surface water and sediment quality in rivers influenced by wastewater treatment plants using different treatment technologies

P. Thellmann · H.-R. Köhler · A. Rößler · M. Scheurer · S. Schwarz · H.-J. Vogel · R. Triebkorn 16405

Prochloraz causes irreversible masculinization of zebrafish (*Danio rerio*)

L. Baumann · S. Knörr · S. Keiter · T. Nagel · H. Segner · T. Braunbeck 16417

For continuation of table of contents, see inside of back cover

Abstracted/Indexed in:

Science Citation Index, Science Citation Index Expanded (SciSearch), Journal Citation Reports/Science Edition, PubMed/Medline, SCOPUS, EMBASE, Chemical Abstracts Service (CAS), Google Scholar, EBSCO, CSA, ProQuest, CAB International, Academic OneFile, AGRICOLA, ASFA, Biological Abstracts, BIOSIS, CAB Abstracts, CEABA-VtB, CSA Environmental Sciences, Current Contents/ Agriculture, Biology & Environmental Sciences, Elsevier Biobase, EMBiology, Environment Index, Gale, Geobase, Global Health, INIS Atomindex, International Bibliography of Book Reviews (IBR), International Bibliography of Periodical Literature (IBZ), OCLC, Referativnyi Zhurnal (VINITI), SCImago, Summon by ProQuest, Vitis - Viticulture and Enology Abstracts

Instructions for Authors for *Environ Sci Pollut Res* are available at www.springer.com/11356

Toxicity of sediment cores from Yangtze River estuary to zebrafish (*Danio rerio*) embryos

P. Wang · L. Zhang · L. Liu · L. Chen · H. Gao · L. Wu 16423

REVIEW ARTICLES

An obstacle to China's WWTPs: the COD and BOD standards for discharge into municipal sewers

Z. Liao · T. Hu · S.A.C. Roker 16434

A review of soil cadmium contamination in China including a health risk assessment

L. Wang · X. Cui · H. Cheng · F. Chen · J. Wang · X. Zhao · C. Lin · X. Pu 16441

Severe situation of rural nonpoint source pollution and efficient utilization of agricultural wastes in the Three Gorges Reservoir Area

T. Zhang · J. Ni · D. Xie 16453

RESEARCH ARTICLES

Abiotic reductive dechlorination of *cis*-DCE by ferrous monosulfide mackinawite

S.P. Hyun · K.F. Hayes 16463

Spatial distribution of pollutant emissions from crop residue burning in the Punjab and Sindh provinces of Pakistan: uncertainties and challenges

M. Irfan · M. Riaz · M.S. Arif · S.M. Shahzad · S. Hussain · M.J. Akhtar · L. van den Berg · F. Abbas 16475

Retention and efficacy of ultra-low volume pesticide applications on *Culex quinquefasciatus* (Diptera: Culicidae)

H. Zhang · G.J. Dorr · A.J. Hewitt 16492

Influence of alum on cyanobacterial blooms and water quality of earthen fish ponds

A. Dawah · A. Soliman · A.E.-F. Abomohra · M. Battah · D. Anees 16502

Adsorption and photocatalysis of nanocrystalline TiO₂ particles for Reactive Red 195 removal: effect of humic acids, anions and scavengers

B. Chládková · E. Evgenidou · L. Kvitek · A. Panáček · R. Zbořil · P. Kovář · D. Lambropoulou 16514

Assessment of amendments for the immobilization of Cu in soils containing EDDS leachates

L. Yang · L. Jiang · G. Wang · Y. Chen · Z. Shen · C. Luo 16525

Effects of Cu²⁺ and Zn²⁺ on growth and physiological characteristics of green algae, *Cladophora*

D.-J. Cao · P.-P. Xie · J.-W. Deng · H.-M. Zhang · R.-X. Ma · C. Liu · R.-J. Liu · Y.-G. Liang · H. Li · X.-D. Shi 16535

A comparative study of antimony accumulation in plants growing in two mining areas in Iran, Moghanlo, and Patyar

N. Jamali Hajiani · S.M. Ghaderian · N. Karimi · H. Schat 16542

Photochemical oxidation of chloride ion by ozone in acid aqueous solution

A.V. Levanov · O.Y. Isaykina · N.K. Amirova · E.E. Antipenko · V.V. Lunin 16554

Columnar and ground-level aerosol optical properties: sensitivity to the transboundary pollution, daily and weekly patterns, and relationships

M.R. Perrone · S. Romano · J.A.G. Orza 16570

Screening of Cd-safe genotypes of Chinese cabbage in field condition and Cd accumulation in relation to organic acids in two typical genotypes under long-term Cd stress

X. Wang · Y. Shi · X. Chen · B. Huang 16590

Analysis of backwashing efficiency in dead-end hollow-fibre ultrafiltration of anaerobic suspensions

L. Vera · E. González · I. Ruigómez · J. Gómez · S. Delgado 16600

Assessment of aerosol optical and micro-physical features retrieved from direct and diffuse solar irradiance measurements from Skyradiometer at a high altitude station at Merak · Assessment of aerosol optical features from Merak

S.S. Ningombam · A.K. Srivastava · S.P. Bagare · R.B. Singh · V.P. Kanawade · N. Dorjey 16610

The suitability of extraction solutions to assess bioaccessible trace metal fractions in airborne particulate matter: a comparison of common leaching agents

A. Mukhtar · V. Mohr · A. Limbeck 16620

Role of transpiration in arsenic accumulation of hyperaccumulator *Pteris vittata* L.

X.-M. Wan · M. Lei · T.-B. Chen · J.-X. Yang · H.-T. Liu · Y. Chen 16631

Characterization of potassium hydroxide (KOH) modified hydrochars from different feedstocks for enhanced removal of heavy metals from water

K. Sun · J. Tang · Y. Gong · H. Zhang 16640

Revisiting the environmental Kuznets curve hypothesis in a tourism development context

G. de Vita · S. Katircioglu · L. Altınay · S. Fethi · M. Mercan 16652

Global sensitivity analysis for an integrated model for simulation of nitrogen dynamics under the irrigation with treated wastewater

H. Sun · Y. Zhu · J. Yang · X. Wang 16664

The variations of aluminium species in mountainous forest soils and its implications to soil acidification

M. Bradová · V. Tejnecký · L. Borůvka · K. Němeček · C. Ash · O. Šebek · M. Svoboda · J. Zenáhlíková · O. Drábek 16676

Characteristics of PM_{2.5} in Miyun, the northeastern suburb of Beijing: chemical composition and evaluation of health risk

Y. Gao · X. Guo · C. Li · H. Ding · L. Tang · H. Ji 16688

Evaluation of an eventual ecotoxicity induced by textile effluents using a battery of biotests

A. Bedoui · V. Tigrini · K. Ghedira · G.C. Varese · L. Chekir Ghedira 16700

Tempo-spatial analysis of water quality in tributary bays of the Three Gorges Reservoir region (China)

J. Tang · T. Wang · B. Zhu · P. Zhao · Y. Xiao · R. Wang 16709

Isotherm, kinetic, and thermodynamic studies on Hg(II) adsorption from aqueous solution by silica- multiwall carbon nanotubes

T.A. Saleh 16721

Radioactivity levels and heavy metals in the urban soil of Central Serbia

B. Milenkovic · J.M. Stajic · L. Gulan · T. Zeremski · D. Nikezic 16732

Biosorption and bioaccumulation of thallium by thallium-tolerant fungal isolates

J. Sun · X. Zou · T. Xiao · Y. Jia · Z. Ning · M. Sun · Y. Liu · T. Jiang 16742

Dynamics of the biological properties of soil and the nutrient release of *Amorpha fruticosa* L. litter in soil polluted by crude oil

X. Zhang · Z. Liu · N.T. Luc · X. Liang · X. Liu 16749

- Model optimization of cadmium and accumulation in switchgrass (*Panicum virgatum* L.): potential use for ecological phytoremediation in Cd-contaminated soils**
Q. Wang · M. Gu · X. Ma · H. Zhang · Y. Wang · J. Cui · W. Gao · J. Gui 16758
- The application of soil amendments benefits to the reduction of phosphorus depletion and the growth of cabbage and corn**
W. Liu · H. Ji · P. Kerr · Y. Wu · Y. Fang 16772
- Distribution of polybrominated diphenyl ethers and HBCD in sediments of the Hunhe River in Northeast China**
J. Su · Y. Lu · Z. Liu · S. Gao · X. Zeng · Z. Yu · G. Sheng · J.-M. Fu 16781
- The stabilization of tannery sludge and the character of humic acid-like during low temperature pyrolysis**
H. Ma · M. Gao · L. Hua · H. Chao · J. Xu 16791
- Integrating ecotoxicity and chemical approaches to compare the effects of ZnO nanoparticles, ZnO bulk, and ZnCl₂ on plants and microorganisms in a natural soil**
C. García-Gómez · M. Babin · A. Obrador · J.M. Álvarez · M.D. Fernández 16803
- Numerical study of a buoyant plume from a multi-flue stack into a variable temperature gradient atmosphere**
R.K. Velamati · M. Vivek · K. Goutham · G.R. Sreekanth · S. Dharmarajan · M. Goel 16814
- A reactive transport model for mercury fate in contaminated soil—sensitivity analysis**
B. Leterme · D. Jacques 16830
- Exogenous NO depletes Cd-induced toxicity by eliminating oxidative damage, re-establishing ATPase activity, and maintaining stress-related hormone equilibrium in white clover plants**
S.L. Liu · R.J. Yang · Y.Z. Pan · M.H. Wang · Y. Zhao · M.X. Wu · J. Hu · L.L. Zhang · M.D. Ma 16843
- Ultra-high performance liquid chromatography-electrospray tandem mass spectrometry for the analysis of antibiotic residues in environmental waters**
Q. Xue · Y. Qi · F. Liu 16857
- Removal of sulfadimethoxine in soil mediated by extracellular oxidoreductases**
R. Singh · S.S. Sidhu · H. Zhang · Q. Huang 16868
- Photocatalytic degradation of humic substances in aqueous solution using Cu-doped ZnO nanoparticles under natural sunlight irradiation**
A. Maleki · M. Safari · B. Shahmoradi · Y. Zandsalimi · H. Daraei · F. Gharibi 16875
- Removal, redistribution, and potential risks of soil Cd, Pb, and Zn after washing with various extractants**
C. Chen · Y. Chen · T. Xie · M.K. Wang · G. Wang 16881
- Permeable reactive barrier of coarse sand-supported zero valent iron for the removal of 2,4-dichlorophenol in groundwater**
W. Gao · Y. Zhang · X. Zhang · Z. Duan · Y. Wang · C. Qin · X. Hu · H. Wang · S. Chang 16889
- Effect of inorganic amendments for in situ stabilization of cadmium in contaminated soils and its phyto-availability to wheat and rice under rotation**
M.Z.-U. Rehman · M. Rizwan · A. Ghafoor · A. Naeem · S. Ali · M. Sabir · M.F. Qayyum 16897
- Electrokinetic remediation of fluorine-contaminated soil and its impact on soil fertility**
M. Zhou · H. Wang · S. Zhu · Y. Liu · J. Xu 16907
- Characterization of the molecular degradation mechanism of diphenyl ethers by *Cupriavidus* sp. WS**
S. Wang · N. Bai · B. Wang · Z. Feng · W.C. Hutchins · C.-H. Yang · Y. Zhao 16914
- Study of photodegradation and photooxidation of *p*-arsanilic acid in water solutions at pH = 7: kinetics and by-products**
M. Czaplicka · K. Jaworek · M. Bąk 16927
- Low level impurities in imported wheat are a likely source of feral transgenic oilseed rape (*Brassica napus* L.) in Switzerland**
J. Schulze · P. Brodmann · B. Oehen · C. Bagutti 16936
- Extraction and application of starch-based coagulants from sago trunk for semi-aerobic landfill leachate treatment**
H.A. Aziz · N.I.M. Sobri 16943
- Identifying the regional-scale groundwater-surface water interaction on the Sanjiang Plain, Northeast China**
X. Wang · G. Zhang · Y.J. Xu · G. Sun 16951
- Are urinary polyaromatic hydrocarbons associated with adult hypertension, heart attack, and cancer? USA NHANES, 2011–2012**
I. Shiue 16962
- UVA illumination-induced optical coupling between tryptophan and natural dissolved organic matter**
X. Wang · H. Chen · K. Lei · Z. Sun 16969
- Selenium species in the roots and shoots of chickpea plants treated with different concentrations of sodium selenite**
L. Lyubenova · X. Sabodash · P. Schröder · B. Michalke 16978
- Assessing the relative efficiency of water companies in the English and Welsh water industry: a metafrontier approach**
M. Molinos-Senante · A. Maziotis · R. Sala-Garrido 16987
- Water quality changes in response to urban expansion: spatially varying relations and determinants**
W. Zhao · X. Zhu · X. Sun · Y. Shu · Y. Li 16997
- Combining multivariate analysis and human risk indices for assessing heavy metal contents in muscle tissues of commercially fish from Southern Red Sea, Saudi Arabia**
A.M. Idris · T.O. Said · A.A. Omran · K.F. Fawy 17012
- Cadmium toxicity in Maize (*Zea mays* L.): consequences on antioxidative systems, reactive oxygen species and cadmium accumulation**
S.A. Anjum · M. Tanveer · S. Hussain · M. Bao · L. Wang · I. Khan · E. Ullah · S.A. Tung · R.A. Samad · B. Shahzad 17022
- Insights into tetracycline adsorption onto kaolinite and montmorillonite: experiments and modeling**
Y. Zhao · X. Gu · S. Li · R. Han · G. Wang 17031
- Cytotoxic and genotoxic effects of abamectin, chlorfenapyr, and imidacloprid on CHO_{K1} cells**
A.S. Al-Sarar · Y. Abobakr · A.E. Bayoumi · H.I. Hussein 17041
- Biosynthesis, mosquitocidal and antibacterial properties of *Toddalia asiatica*-synthesized silver nanoparticles: do they impact predation of guppy *Poecilia reticulata* against the filariasis mosquito *Culex quinquefasciatus*?**
K. Murugan · J.S.E. Venus · C. Panneerselvam · S. Bedini · B. Conti · M. Nicoletti · S.K. Sarkar · J.-S. Hwang · J. Subramaniam · P. Madhiyazhagan · P.M. Kumar · D. Dinesh · U. Suresh · G. Benelli 17053
- Effects of drying on phosphorus uptake in re-flooded lake sediments**
D. Dieter · C. Herzog · M. Hupfer 17065

Solar light ($h\nu$) and $H_2O_2/h\nu$ photo-disinfection of natural alkaline water (pH 8.6) in a compound parabolic collector at different day periods in Sahelian region

J. Ndounla · C. Pulgarin 17082

Urinary heavy metals, phthalates and polyaromatic hydrocarbons independent of health events are associated with adult depression:

USA NHANES, 2011–2012

I. Shiue 17095

Analysis of conservative tracer measurement results using the Frechet distribution at planted horizontal subsurface flow constructed wetlands filled with coarse gravel and showing the effect of clogging processes

E. Dittrich · M. Klincsik 17104

The accumulation and potential ecological risk of heavy metals in microalgae from a eutrophic lake (Taihu Lake, China)

H. Yuan · E. Liu · J. Shen 17123

Impact of sludge stabilization processes and sludge origin (urban or hospital) on the mobility of pharmaceutical compounds following sludge landspreading in laboratory soil-column experiments

D. Lachassagne · M. Soubrand · M. Casellas · A. Gonzalez-Ospina · C. Dagot 17135

Restoration of rare earth mine areas: organic amendments and phytoremediation

L. Zhou · Z. Li · W. Liu · S. Liu · L. Zhang · L. Zhong · X. Luo · H. Liang 17151

Earthworms modify microbial community structure and accelerate maize stover decomposition during vermicomposting

Y. Chen · Y. Zhang · Q. Zhang · L. Xu · R. Li · X. Luo · X. Zhang · J. Tong 17161

Polychlorinated biphenyls and organochlorine pesticides in atmospheric particulate matter of Northern China: distribution, sources, and risk assessment

S. Ding · F. Dong · B. Wang · S. Chen · L. Zhang · M. Chen · M. Gao · P. He 17171

Alleviating the toxicity of heavy metals by combined amendments in cultivated bag of *Pleurotus cornucopiae*

H. Liu · S. Guo · Z. Jia · Y. Han · Q. He · H. Xu 17182

Determination of the psychoactive drugs carbamazepine and diazepam in hospital effluent and identification of their metabolites

C.A.A. de Almeida · M.S. Oliveira · C.A. Mallmann · A.F. Martins 17192

Mn/Ti-doped carbon xerogel for efficient catalysis of microcystin-LR degradation in the water surface discharge plasma reactor

Q. Xin · Y. Zhang · Z. Li · L. Lei · B. Yang 17202

Occurrence of pharmaceuticals in municipal wastewater, in the recipient water, and sedimented particles of northern Lake Päijänne

P.C. Lindholm-Lehto · H.S.J. Ahkola · J.S. Knuutinen · S.H. Herve 17209

Insecticidal potency of *Aspergillus terreus* against larvae and pupae of three mosquito species *Anopheles stephensi*, *Culex quinquefasciatus*, and *Aedes aegypti*

C. Ragavendran · D. Natarajan 17224

SHORT RESEARCH AND DISCUSSION ARTICLES

Pd nanoparticles supported on MIL-101/reduced graphene oxide photocatalyst: an efficient and recyclable photocatalyst for triphenylmethane dye degradation

Y. Wu · H. Luo · L. Zhang 17238

Geosmin induces genomic instability in the mammalian cell microplate-based comet assay

A.F. Silva · M. Lehmann · R.R. Dohl 17244

Environmental risks of HBCDD from construction and demolition waste: a contemporary and future issue

Z. Nie · Z. Yang · Y. Fang · Y. Yang · Z. Tang · X. Wang · Q. Die · X. Gao · F. Zhang · Q. Wang · Q. Huang 17249

LETTER TO THE EDITOR

Fipronil should not be categorized as a “systemic insecticide”: a reply to Gibbons et al. (2015)

S.R. Mortensen · J.D. Holmsen · L. Weltje 17253

CONFERENCE REPORT

Pesticides applications assessment in banana crop conditions: a methodological approach

B. Bonicelli · E. Cotteux · J.P. Douzals 17255