

CONTENTS

Volume 183 December 2013

SPECIAL ISSUE: Selected Papers from Urban Environmental Pollution 2012

Introduction

- 1 Urban environment: Recognizing that pollution and social factors can create barriers to development of more healthy and liveable cities**
W.J. Manning

Human Health

- 2 Urban social stress – Risk factor for mental disorders. The case of schizophrenia**
F. Lederbogen, L. Haddad, A. Meyer-Lindenberg
New data support the hypothesis that increased exposure to social stressors is a key factor mediating the increased prevalence of specific mental disorders in urban populations.
- 7 The effects of exposure to environmental factors on Heart Rate Variability: An ecological perspective**
I. Schnell, O. Potchter, Y. Epstein, Y. Yaakov, H. Hermesh, S. Brenner, E. Tirosh
The research focuses on the effects of environmental factors; noise, subjective social stress, thermal load and CO on Heart Rate Variability.
- 14 The impact of winter cold weather on acute myocardial infarctions in Portugal**
J. Vasconcelos, E. Freire, R. Almendra, G.L. Silva, P. Santana
There is an increase of up to 2.2% in daily hospitalizations due to acute myocardial infarctions per degree fall of thermal index during the winter months in Portugal.
- 19 Pro-inflammatory effects and oxidative stress in lung macrophages and epithelial cells induced by ambient particulate matter**
S. Michael, M. Montag, W. Dott
The toxicological responses of lung epithelial cells and macrophages differ significantly after an exposure to equal mass concentrations of urban traffic and rural PM.
- 30 A cohort study of intra-urban variations in volatile organic compounds and mortality, Toronto, Canada**
P.J. Villeneuve, M. Jerrett, J. Su, R.T. Burnett, H. Chen, J. Brook, A.J. Wheeler, S. Cakmak, M.S. Goldberg
Long-term exposure to ambient benzene was associated with non-accidental and cancer causes of death, and did not attenuate associations between NO₂ and cardiovascular mortality.
- 40 Risk of tuberculosis in high-rise and high density dwellings: An exploratory spatial analysis**
P.-C. Lai, C.-T. Low, W.-S.C. Tse, C.-K. Tsui, H. Lee, P.-K. Hui
Research on TB prevalence of Hong Kong and its compact urban development with public health implications for Asian cities in pursuit of high-rise urban living.
- 46 Novel biospectroscopy sensor technologies towards environmental health monitoring in urban environments**
B.E. Obinaju, F.L. Martin
Biospectroscopy techniques allow the fingerprinting of biological material in a wide range of contexts that could relate to environmental health monitoring in urban environments.
- 54 Interactive short-term effects of equivalent temperature and air pollution on human mortality in Berlin and Lisbon**
K. Burkart, P. Canário, S. Breitner, A. Schneider, K. Scherber, H. Andrade, M.J. Alcoforado, W. Endlicher
Interactive effects between air pollution and elevated (equivalent) temperatures underscore the importance of air pollution control in mitigating the adverse effects of heat.

Vegetation and Urban Environment

- 64 Effects of species-specific leaf characteristics and reduced water availability on fine particle capture efficiency of trees**
J.V. Räsänen, T. Holopainen, J. Joutsensaari, C. Ndam, P. Pasanen, Å. Rinnan, M. Kivimäenpää
Trees can improve air quality by removing PM_{2.5} pollutants carried on the wind at a velocity of 3 m s⁻¹, the efficiency of which depends on species leaf characteristics and physical factors.
- 71 Role of Biogenic Volatile Organic Compounds (BVOC) emitted by urban trees on ozone concentration in cities: A review**
C. Calfapietra, S. Fares, F. Manes, A. Morani, G. Sgrigna, F. Loreto
BVOC emission from urban trees can be very important for ozone concentration.
- 81 Phytoremediative urban design: Transforming a derelict and polluted harbour area into a green and productive neighbourhood**
M. Wilschut, P.A.W. Theuws, I. Duchhart
A research by design method can translate scientific knowledge on phytoremediation into an aesthetic spatial composition for a specific site, thereby linking science and practice.
- 89 Holm Oak (*Quercus ilex* L.) canopy as interceptor of airborne trace elements and their accumulation in the litter and topsoil**
F. Fantozzi, F. Monaci, T. Blanusa, R. Bargagli
Quercus ilex leaves are efficient interceptors of airborne trace elements in urban environments and we found an increased accumulation of metals in topsoil under the tree canopy.
- 96 Comparison of leaf saturation isothermal remanent magnetisation (SIRM) with anatomical, morphological and physiological tree leaf characteristics for assessing urban habitat quality**
F. Kardel, K. Wuyts, A.R. Khavaninzhadeh, T. Wuytack, M. Babanezhad, R. Samson
Leaf characteristics and leaf SIRM as indicators of urban habitat quality.
- 104 Does urban vegetation mitigate air pollution in northern conditions?**
H. Setälä, V. Viippola, A.-L. Rantalainen, A. Pennanen, V. Yli-Pelkonen
The ability of urban vegetation to remove air pollutants seems to be minor in northern climates.
- 113 Improving local air quality in cities: To tree or not to tree?**
P.E.J. Vos, B. Maiheu, J. Vankerkom, S. Janssen
Rather than improving the local air quality, our results suggest that roadside urban vegetation increases the pollutant concentrations at the footpath.
- 123 Spatial distribution assessment of particulate matter in an urban street canyon using biomagnetic leaf monitoring of tree crown deposited particles**
J. Hofman, I. Stokkaer, L. Snauwaert, R. Samson
Biomagnetic leaf monitoring provides useful insights into the spatial distribution of particulates inside individual tree crowns and an urban street canyon in Ghent (Belgium).
- 133 Identifying potential sources of variability between vegetation carbon storage estimates for urban areas**
Z.G. Davies, M. Dallimer, J.L. Edmondson, J.R. Leake, K.J. Gaston
As variability between urban vegetation carbon storage estimates is becoming increasingly apparent, we examine potential methodological drivers that may be responsible, and illustrate why a more consistent approach to biological carbon accounting would be beneficial.

Urban Environment

- 143 Biogenic volatile organic compounds from the urban forest of the Metropolitan Region, Chile**
M. Préndez, V. Carvajal, K. Corada, J. Morales, F. Alarcón, H. Peralta
First experimental determination of the emission factors of biogenic volatile organic compounds in the urban forest of the Metropolitan Region, Chile.
- 151 BaP (PAH) air quality modelling exercise over Zaragoza (Spain) using an adapted version of WRF-CMAQ model**
R. San José, J.L. Pérez, M.S. Callén, J.M. López, A. Mastral
BAP air quality modelling exercise using state-of-the-art air quality models and compare with BAP monitoring data in ad-hoc monitoring campaign.
- 159 Spatial distribution of ground-level urban background O₃ concentrations in the Metropolitan Area of Buenos Aires, Argentina**
A.L. Pineda Rojas, L.E. Venegas
The distribution of summer maximum diurnal ground-level O₃ concentrations in the Metropolitan Area of Buenos Aires is evaluated applying a recently developed simple urban air quality model.
- 166 Nature and sources of particle associated polycyclic aromatic hydrocarbons (PAH) in the atmospheric environment of an urban area**
M.S. Callén, J.M. López, A. Iturmendi, A.M. Mastral
Episodes with the most negative impact on human health regarding PAH were produced by a higher contribution of stationary and vehicular emissions in winter season.

- 175 Polycyclic aromatic hydrocarbons and nitropolycyclic aromatic hydrocarbons in particulates emitted by motorcycles**
C.T. Pham, T. Kameda, A. Toriba, K. Hayakawa
Control polycyclic aromatic hydrocarbons and nitropolycyclic aromatic hydrocarbon in particulates emitted by motorcycles due to their toxic potency.
- 184 A novel approach for investigating the trends in nitrogen dioxide levels in UK cities**
M.C. Bell, F. Galatioto, A. Chakravarty, A. Namdeo
Explored appropriateness of the hazard theory to understand the failure rate of air pollution events and to investigate the year on year trends observed in air quality data in major cities.
- 195 Effect of substrate depth and rain-event history on the pollutant abatement of green roofs**
M. Seidl, M.-C. Gromaire, M. Saad, B. De Gouvello
The green roofs tested, showed variable retention capacity for the common pollutants, but were especially efficient in heavy metals retention, which long-term evolution was evaluated in simultaneous column experiments.
- 204 Retrofitting impervious urban infrastructure with green technology for rainfall-runoff restoration, indirect reuse and pollution load reduction**
J. Sansalone, S. Raje, R. Kertesz, K. Maccarone, K. Seltzer, M. Siminari, P. Simms, B. Wood
Continuous simulation of climate and site data demonstrate that urban re-design using green infrastructure can provide long-term "no-net-load-increases" at a lower costs compared to BMPs.
- 213 Systems scale assessment of the sustainability implications of emerging green initiatives**
A. Tiwary, A. Namdeo, J. Fuentes, A. Dore, X.-M. Hu, M. Bell
Systems scale implication for air pollution was assessed across three sectors of emerging green initiatives-energy, transport and ecosystem.
- 224 Methodology for setup and data processing of mobile air quality measurements to assess the spatial variability of concentrations in urban environments**
M. Van Poppel, J. Peters, N. Bleux
This paper shows that the spatial variability of air pollutants in an urban environment can be assessed by a mobile monitoring methodology including background correction.
- 234 Risk assessment for Cd, Cu, Pb and Zn in urban soils: Chemical availability as the central concept**
S.M. Rodrigues, N. Cruz, C. Coelho, B. Henriques, L. Carvalho, A.C. Duarte, E. Pereira, P.F.A.M. Römken
A single analysis of the reactive pool by dilute nitric acid is suitable to assess risks of Cd, Cu, Pb and Zn in urban soils related to leaching to (ground)water and exposure to human beings (bioaccessibility).