Environmental Health Risk IV
FOURTH INTERNATIONAL CONFERENCE ON
THE IMPACT OF ENVIRONMENTAL FACTORS ON HEALTH

ENVIRONMENTAL HEALTH RISK IV

CONFERENCE CHAIRMAN

C.A. Brebbia
Wessex Institute of Technology, UK

INTERNATIONAL SCIENTIFIC ADVISORY COMMITTEE

D. Adang  O. Herbarth  F. Patania
D.M. Bonotto  G.K. Luk  V. Popov
D. Fayzieva  G. Passerini  F. Russo

Organised by
Wessex Institute of Technology, UK

Sponsored by
WIT Transactions on Biomedicine and Health
WIT Transactions on Biomedicine and Health

Transactions Editor

Carlos Brebbia
Wessex Institute of Technology
Ashurst Lodge, Ashurst
Southampton SO40 7AA, UK
Email: carlos@wessex.ac.uk

Editorial Board

M W Collins
Brunel University West London
UK

K Held
Harvard Medical School
USA

M Karlsson
Linkoping University
Sweden

C J Lumsden
University of Toronto
Canada

R Pietrabissa
Politecnico di Milano
Italy

S T Tadano
Hokkaido University
Japan

F Grandori
Politecnico di Milano
Italy

P R Johnston
Griffith University
Australia

L J Leon
University of Montreal
Canada

F Neumann
University of Vienna
Austria

H Power
University of Nottingham
UK
Environmental
Health Risk IV

Editor

C.A. Brebbia
Wessex Institute of Technology, UK
PREFACE

This book contains most of the papers presented at the Fourth International Conference on the Impact of Environmental Factors in Health (Environmental Health Risk 07). It is part of a successful series that started at the University of Cardiff in 2001, followed by a second meeting in Catania (2003) and the last one in Bologna (2005).

Health problems related to the environment continue to be a major source of concern all over the world. Society needs to develop measures that will eliminate or considerably reduce hazardous factors from the environment that can result in health risk to humans. The Conference aimed to foster the development of better experimental and modelling tools to achieve these objectives.

This interaction between environmental risk and health is usually complex and involves a substantial number of factors. This resulted in an interdisciplinary meeting in which diverse aspects of the impact of environmental factors in health were discussed.

The papers published in this book are divided into the following sections:
- Air pollution
- The built environment and health
- Occupational health
- Water quality issues
- Risk prevention and monitoring
- Social and economical issues

The Editor is indebted to all members of the Scientific Advisory Committee who have helped to select the papers presented in this book. He is also grateful to all contributors for their excellent presentations.

The Editor
Malta, 2007
Contents

Section 1: Air pollution

Indoor exposure associated risk for eczema in early childhood
O. Herbarth, G. J. Fritz, M. Rehwagen, M. Richter,
S. Röder & U. Schlink.................................................................3

The case of atmospheric pollution using production waste
in a building materials factory: an applied industrial case
F. Patania, A. Gagliano, F. Nocera, A. Galesi & A. D’Amico.......................13

Indoor air quality in old and new schools
K. Rumchev, R. Ourangui, D. Bertolatti & J. Spickett.................................25

Relation between ambient air and breath volatile organic compounds
H. Dhondt, E. Goelen, G. Koppen & L. Verschaeve.................................33

A dynamic model of mobile source air pollution and its properties
V. Rumchev & L. Caccetta...............................................................41

Section 2: The built environment and health

Daylight, architecture and people’s health
M. Boubekri.......................................................................................53

Survey system for life styles of the elderly and to identify
the consumption of food and drink
A. Sawada, T. Oyabu, S. Seto & T. Katsube............................................61

Building materials vs. fungal colonization – model experiments
E. Piecková, Z. Pivovarová, Z. Sternová & E. Droba.................................71
Use of the in vitro model for the evaluation of toxic effects of metabolites produced by fungi
Z. Kováčiková, E. Piecková, E. Tátrai, Z. Pivovarová & M. Mataušic-Pišl
79

Validation and implication of segmentation on Empirical Bayes for highway safety studies
R. R. Souleyrette, R. P. Haas & T. H. Maze
85

Section 3: Occupational health

Evaluation of physiological comfort index for workers wearing protective clothing in nuclear or other harsh environments
F. Cumo, F. Gugliermetti & G. Guidi
97

Environmental health risk from past uranium mining and milling activities
F. P. Carvalho
107

The role of measurement accuracy on the heat stress assessment according to ISO 7933: 2004
F. R. d’Ambrosio Alfano, B. I. Palella & G. Riccio
115

Section 4: Water quality issues

Evaluating safety of drinking water using animal cell bioassays
G. K. Luk
127

Health risk related to radon in a thermal spa utilizing waters from Guarani aquifer
D. M. Bonotto & T. O. Santos
137

Environmental hazard and water quality: the River Platani basin
V. Liguori & G. Manno
147

The contribution of drinking water fluoride to the risk of dental fluorosis in Estonia
E. Indermitte, A. Saava, S. Russak & A. Kull
161

Vanadium and lithium contamination in freshwaters of the Conchos River in Chihuahua, Mexico
171
Arsenic concentrations in the San Pedro River of Chihuahua, Mexico

Nitrate pollution in the Delicias-Meoqui aquifer of Chihuahua, Mexico
M. S. Espino, H. O. Rubio & C. J. Navarro

Environmental impacts of wastewater from low-rank coal handling processes in terms of mutagenicity and acute toxicity

Section 5: Risk prevention and monitoring
Climate change, migratory species and pandemic influenza
K. Duncan

Environmental education and the health risk question: how do we educate the educators working with this theme?
D. M. Bianchini Bonotto

Risk analysis of heavy metal contaminated habitats using a wolf spider, Pardosa astrigera (Araneae: Lycosidae)

Methods for calculating PNECs using species sensitivity distribution (SSD) with various hypothesis on the way to handle ecotoxicity data
P. Ciffroy

Section 6: Social and economic issues
Khartoum 2030: towards the healthy city
A. M. Ahmad

Comparative study of environmental regulations in Latin America
G. Rincón, L. Cremades, U. Ehrmann & A. Peña

Reducing the environmental health risk of the vulnerable group in a developing country: a case study of metropolitan Lagos
I. Nwokoro

Author Index