

Environmental Science and Technology

(2007)

Volume 2

Edited by

Steven K. Starrett

Jihua Hong

Robert J. Wilcock

Qilin Li

John H. Carson

Samantha Arnold

Environmental Science and Technology

(2007)

Volume 2

Edited by

Steven K. Starrett
Jihua Hong
Robert J. Wilcock
Qilin Li
John H. Carson
Samantha Arnold

American Science Press, Houston, USA

Library of Congress Cataloging-in-Publication Data

Environmental Science and Technology 2007 (2)

Proceedings from the Third International Conference on Environmental Science and Technology, held August 6-9, 2007 in Houston, Texas, USA

Includes bibliographical references
ISBN 978-0976885399

I. Starrett, Steven K.

II. Hong, Jihua

III. Wilcock, Robert J.

IV. Li, Qilin

V. Carson, John H.

VI. Arnold, Samantha

VII. International Conference on Environmental Science and Technology
(3rd : 2007 : Houston : Texas)

Printed in the United States of America

Copyright © 2007 American Science Press. All rights reserved. This document, or parts thereof, may not be reproduced in any form without the written permission of the American Science Press. Requests for permission or further information should be addressed to the American Science Press, 9720 Town Park Drive, Houston, TX 77036, USA

Email: press@AASci.org

Website: www.AASci.org/conference/env

ISBN 978-0976885399
© 2007 American Science Press

SCIENTIFIC/TECHNICAL COMMITTEE

**3rd INTERNATIONAL CONFERENCE
ON ENVIRONMENTAL SCIENCE AND TECHNOLOGY
(ICEST2007)**

Dr. Yousef Al-Dakheel
King Faisal University
Hofuf, Saudi Arabia

Ibrahim Al-Khattat
Sustainable Science Inc.
Coralville, IA, USA

Dr. Raafat Alnaizy
American University of Sharjah
Sharjah, UAE

Dr. Pedro J. Alvarez
Rice University
Houston, Texas, USA

Dr. Samantha Arnold
Golder Associates (UK) Ltd
Nottingham, UK

Dr. Claudia Boian
University of São Paulo
São Paulo, Brazil

Dr. John Carson
Shaw Environmental
Findlay, OH, USA

Hemant Chowdhary
Louisiana State University
Baton Rouge, LA, USA

Dr. Filiz B. Dilek
Middle East Technical University
Ankara, Turkey

Anna M. Doro-on
Pape-Dawson Engineers, Inc.,
San Antonio, Texas, USA

Dr. Reese Halter
Global Forest Science
Mill Valley, CA, USA

Dr. Barry J. Hibbs
California State University Los Angeles
Los Angeles, CA, USA

Dr. Mark Holtzaple
Texas A&M University
College Station, TX, USA

Dr. Jim Hong
American Academy of Sciences
Houston, TX, USA

Dr. Mark Ibekwe
USDA-ARS-USSSL
Riverside, CA, USA

Dr. Jayakumar Indracanti
Jackson State University
Jackson, Mississippi, USA

Dr. B. Manoj Kumar
Sri Jayachamarajendra College of Engineering
Karnataka India

Dr. Qilin Li
Rice University
Houston, TX, USA

Dr. Mahtab A. Lodhi
University of New Orleans
New Orleans, LA, USA

Samea Lone
University of Arkansas
Little Rock, AR, USA

Dr. William G. Lyon
American Academy of Sciences
Houston, TX, USA

Dr. Nancy J. McMillan
New Mexico State University
Las Cruces, NM, USA

Dr. Hamada Mohamed Mahmoud
American University in Cairo
Egypt

Dr. Danielle Miousse
Global Ionix Inc.,
Boucherville, QC, Canada

Dr. George Elambo Nkeng
Ecole Nationale Supérieure des Travaux Publics,
Camoron

Dr. Olusheyi Zaccheaus Ojekunle
Tianjin University
Tianjin, China

Dr. Theodore I. Onyeche
CUTEC-Institut GmbH
Clausthal-Zellerfeld, Germany

Dr. Yih-Ho Michael Pao
National Academy of Engineering USA;
Floating Windfarms LLC,
Houston, TX, USA

Dr. Avin E. Pillay
Petroleum Institute
Abu Dhabi, UAE

Dr. Mubeena Akhtar Rajput
University of Sindh
Jamshoro, Pakistan

Dr. Sunkari Ramakrishna Rao
Andhra University
Andhr Pradesh, India

Mallika Senevirathna
Colt Engineering Corporation
Calgary, Alberta, Canada

Dr. George A. Sorial
University of Cincinnati
Cincinnati, OH, USA

Achim Stolle
Friedrich-Schiller University Jena
Jena, Germany

Dr. Shelli Starrett
Kansas State University
Manhattan, KS, USA

Dr. Steven K. Starrett
Kansas State University
Manhattan, KS, USA

Dr. Beyza USTUN
Yildiz Technical University
Besiktas, Istanbul, Turkey

Dr. Licina Vlado
University of Belgrade
Zemun-Beograd, Serbia

Dr. Robert J. Wilcock
National Institute of Water & Atmospheric
Research
Hamilton, New Zealand

Dr. Shuo-sheng (Derek) Wu
U.S. Geological Survey
Rolla, MO, USA

Dr. Chonghua Yao
East China University of Science and
Technology
Shanghai, China

Dr. Ulku Yetis
Middle East Technical University,
Ankara, Turkey

Dr. Chunlong (Carl) Zhang
University of Houston-Clear Lake
Houston, TX, USA

Dr. Yifang Zhu
Texas A&M University-Kingsville
Kingsville, TX, USA

TABLE OF CONTENTS

INTRODUCTION

Steven K. Starrett, Jihua Hong, Robert J. Wilcock, Qilin Li, John Carson, Samantha Arnold. 1

LAND (SOIL, SOLID WASTE) POLLUTION AND REMEDIATION

Waste Recycling

Synthesized Zeolite from Coal And Bagasse Fly Ash by Using Spent Alkaline. <i>Srisatit Thares, Phanphaisan Anakka-on</i>	4
Magnetic Density Separation. <i>E.J. Bakker, P.C. Rem, D. Hartmann, G.J. Bakker</i>	12
<i>Nisargruna</i> : A Novel Method for Degradation of Organic Waste. <i>Sharad P. Kale, Shubhada S. Nayak</i>	19
Leaching Improvement for Separated Bottom Ash by Wet Physical Techniques. <i>Lenka Muchová, Peter Rem</i>	26
Use of Industrial By-Products as Cementitious Materials in Concrete Bridge Decks. <i>Sukhvarsh Jerath, Charles Moretti, Ali Abolmaali, Greg Johnson</i>	32

Pollutants in the Subsurface

An Investigation into Preventing the Vertical Migration of Salt from Brine Contamination. <i>Carla J. Landrum, Shoeb Munshi, J. Berton Fisher, Eleanor M. Jennings, Kerry Sublette, William Redman, Bryan Tapp, Dan Weber</i>	38
Modeling Of A Co-Existing Anaerobic-Aerobic Biotransformations of Chlorinated Ethenes in the Subsurface. <i>Wonyong, Mustafa M. Aral</i>	39

In-Situ Remediation

Can Density-Dependent Changes in Plant Growth Indicate Success of <i>In-Situ</i> Remediation? <i>Aki Sinkkonen, Rauni Strömmer</i>	40
Fenton-Like Oxidation of 2,4,6-Trinitrotoluene in Presence of Iron Bearing Minerals. <i>Roger Matta, Khalil Hanna, Serge Chiron</i>	46
Laboratory and pilot studies of bioremediation of pentaerythritol tetranitrate contaminated soil. <i>Li Zhuang, Lai Gui, Robert W. Gillham</i>	53
Application of Bio-Slurry Phase Reactor for Removal of Pahs from Soil Contaminated With Transformer Oil. <i>Udayashankara T.H., Lokesh K.S., Naveen J.M., Manjunath N. T</i>	59
Effect of Hydraulic Loading Rate on Performance of Shallow Soil Infiltration Treatment System. <i>Zhi-yin Zhang, Zhong-fang Lei, Zhen-ya Zhang, Norio Sugiura</i>	65
Quantification of Zero Valent Iron Permeable Reactive Barrier Longivity Using Image Analysis. <i>P. Luo, E.H. Bailey, S.J. Mooney</i>	66
In-Situ Chemical Reduction of Chlorinated Solvents Using EHC tm – A Pilot Test in Belgium. <i>Jan Van Linden, Veerle Callebaut, Gert Vermeiren, Fayaz Lakhwala, Josephine Molin, Jim Mueller</i>	66
Novel Iron-Silica Nanoscale Particles for In-Situ Reduction of Soil Contaminants. <i>Vijay T. John, Gary L. McPherson, Gerhard Piringer, Jingjing Zhang, Tonghua Zhen</i>	67
Chemical and Biological Effects of Carbon Substrates on Treating Acid Mine Drainage. <i>Michael R. Sieczkowski</i>	67
Permeable Reactive Barrier for Remediation of Total Chromium in Groundwater of Naoriayakhera Industrial Area, Kanpur, U.P., India. <i>BA Prakash, VVS Gurunadha Rao, M. Ramesh, K Krishna Kumar, K Mahesh, N Pavan Kumar, RK Singh</i>	68

Solid Waste Management

- Urban Wastes Management in Nigeria. **J. Smah** 69
 Overview of Solid Waste Management by an Oil Producing Industry in Nigeria.
Udoh, A. A, Akpan, A. J.71

On-site and Off-site Remediation

- Studies on the Optimisation of Bioremediation Factors of Refinery Waste in Soil. **Gerard Nkwelang;**
George E. Nkeng; Lysette B. Tankoua; Henri F. L. Kamga; S. P. Antai 81
 Bioremediation of Petroleum Refinery Oily Sludge in Tropical Soil. **George E Nkeng;**
Gerard Nkwelang; Otang Mathew; Zachary W. Senwo 87
 Evaluation of Sequential Extraction Procedure for the Lead Pattern of MSWI Fly Ash During
 Thermal Treatment. **Ming-Yen Wey, Jing-Dong Chou, Shih-Hsien Chang, Chiou-Liang Lin.** 93

Landfill

- Gas Emissions Law of Municipal Refuse in Landfill Site, S-China.
Guo Bin , Zhou Baohua, Gao Jingxuan, Ma Jianli 94
 Differentiation of Chemical Composition and Behaviour of Fly Ash as a Function of Its Particle Size
 Distribution. **Socrates Itskos, Grigorios Itskos, Emmanuel Kakaras, Nikolaos Koukouzas.**..... 101

Radioactive Waste and Land Pollution

- Social Dimension and Technical Aspects of Offshore Disposal Sites in Japan.
Kazuto ENDO, Masato YAMADA, Yuzo INOUE 107
 Elevated Levels of Natural Radioactivity in Petroleum Sludge. **A.E. Pillay, F.M. Salih** 113
 Pore Connectivity Analysis and Gas Transfer in Deep Geological Nuclear Barrier. **Pierre Francois**
Boulin, Jean Talandier, Rafael Angulo-Jaramillo, Jean-Francois Daïan 119
 Utilization of Agricultural By-Products to Minimize Organophosphate Pesticides Leaching Through Soil.
Siraprapa Romyen, Ekawan Luepromchai, Benjalak Karnchanasest, Darryl Hawker125
 Characterization of ^{239,240}Pu Radionuclide Sorption to Soil Particles and Mineral Dust Aerosols.
Tatro, D.P., McMillan, N.J., Arimoto, R., Barnes, M., LaMont, S.P., Steiner, R.E.,
Roensch, F.R. 125

ECOSYSTEM ASSESSMENT AND RESTORATION**Ecosystem Assessment**

- The Ecological Accident with Cyanide Spill at Baia Mare Deposition Pond.
Aurel Ardelean, Dorina Ardelean, Marin Burtică, Viorel Pop 128
 Benthic Ecosystem Developed in Artificial Tidal Flat Constructed with Dredged Soil.
Ryo Ishii, Y. Nakano, S. Nakai, W. Nishijima, M. Okada 135
 Ecological Stability Classification System for Assessment of Forest Ecosystems.
Vladimír Čaboun, Jozef Vladovič, Jaroslav Jankovič 141
 Study on Ecology Restoration of Dry-Hot Valley in Jinsha River Basin.
Yong-gang GE, Peng CUI, Yong-ming LIN 147
 North American Forests in a Warming World. **Reese Halter** 154

Restoration of Ecosystems

- Landslide Sensitivity on Land-Use Types of Jiangjia Ravine. **XIE Xian-jian, WEI Fang-qiang** 155
 Anoxia in the Coastal Arabian Sea: Bacterial Evidences through the Spatial Decoupling Phenomenon.
Sheryl O. Fernandes, Shanta Nair, Anil K. Pratihari, P.A. Loka Bharathi K.P.Krishnan 164

Urban Ecosystems

- Urban Floodplain Management in Europe and America: A Few Examples and Strategies Compared.

Kathy Becker-Goss	165
Establishment of Green Yards: A Closer Step to Address Food Security in Philippine Urban Centers. Victor Prodigio, Alain Russ Dimzon, Joussan Dolar	171
Linking Environment, Population and Health: The Case of Inter-Local Governance in Northern Iloilo, Philippines. Victor Prodigio, Alain Russ Dimzon, Joussan Dolar	172

WETLANDS

Wetland Conservation/ Wetlands for Wastewater Treatment

Constructed Treatment Wetlands: Sustainable Technology for the Petroleum Industry. Paul Emeka Eke, Miklas Scholz, Scott D. Wallace	174
Water Pollution Control by Constructed Wetland-Aquatic Pond Systems. Lütfi Akça, Selma Ç. Ayaz ..	180
An Overview of the Application of Constructed Wetlands for Wastewater Treatment in Ireland. A.O. Babatunde, Y.Q. Zhao, M. O'Neill, B. O'Sullivan	186

SEDIMENTS

Assessment of Sediments

Antimony- and Arsenic-Species in Sediment Pore Water Tested With Sofie®. Lars Duester, Alfred V. Hirner, Jos P.M. Vink	194
Determination of Phytotoxicity Effect in Polluted Sediment: In Case “Kucukcekmece Lagoon and Sazlidere Creek”. Sevgi Demirel, Zehra Sapci Zengin, Beyza Ustun	201
Effects of Apatite and Organoclay on Metal Bioavailability in Contaminated Sediments. Anna Sophia Knox, Michael H. Paller, Danny D. Reible	206

Remediation of Sediments

Modeling Of Sediment Nutrient Fluxes for a Pulsed Organic Load. Y.X. Wang, X.Y. Li, J.H.W. Lee	207
Effect of Colloidal Clay on Larvae Rohu <i>Labeo Rohita</i> , Boche in Thailand. Rungtawan Panakulchaiwit, Wimala Sungsua	215
The Use of Critical Solution Mixtures for Contaminated Sediments or Sludge Remediation. Tal Golan, Zvi Ludmer and Elena Ermolenko, Neima Brauner, Amos Ullmann	220

GLOBAL CHANGE

Global Change

Impact of Sea Level Rise in the Gulf of Sidra, Libya Using SRTM – DTM. Ali Said, Ali Eliawa	226
Resources Competition Between C ₄ and C ₃ Plants in the Songnen-Plains of China. Li Wang, Fang Ma	233
Awareness Concerns of the Effect of Global Warming On Coastal Regions of Nigeria. Akpan A. J. ..	239
Global Climate Change: Mitigation and Adaptation Strategies - The Chinese Approach. Ojekunle, Z. Olusheyi, Zhao Lin	252
Realistic Environmental Simulation of Global Change Scenarios for Plant Stress Research. Harald K. Seidlitz, Andreas Albert, Jana Barbro Winkler	253

METALS

Metal Distribution

Isotopic Data Reveal Historic and Present-Day Redox Controls on Selenium Distribution and Mobilization. Rachel Andrus, Barry Hibbs, Andre Ellis	255
--	-----

Occurrence and Distribution of Naturally Occurring Arsenic in the Humboldt River Basin, Northern Nevada. Shahnewaz Mohammad, Regina N. Tempel	262
Distribution, Speciation and Extractability of Cadmium in the Sedimentary Phosphorite of Hahotoé-Kpogamé (Southern Togo). Gnandi, K., Rezaie Boroon, M. H., Deheyn, D. Dimitri	268

Metal Removal and Remediation

Cobalt Mobility in a Calcareous Soil As Affected By Catechol in Solution. Deok Stéphanie Szenknect, Jimmy Nesbit, Sylvie Motellier	276
Investigation of Sorption of Cd(II) on Soil Component Quartz and Recovery of Cd(II) Using Biosurfactant. Yeliz Aşçı, Macid Nurbaş, Y. Sağ Açikel	283
Recovery of Cadmium Ions from Smectite-Bearing Soils by a Rhamnolipid Biosurfactant. Yeliz Aşçı, Macid Nurbaş, Osman Sermet Kabasakal, Yeşim Sağ Açikel	288
Electrochemical Studies of Solid Oxide Fuel Cells Using Nickel-Anode Catalyst. Jingbo Liu Xiaoliu Chi, Josephine Hill, Viola Birss	292
Remediation of Hexavalent Chromium via Zero Valent Iron: Batch Study Using Aged Iron. Autumn J. Russek, Chunlong Zhang	293
Cadmium Adsorption by Alfisol As Influenced by Fly Ash and Sewage Sludge Application. Sabry Shaheen, Christos Tsadilas, Vassilios Samaras, Dimitrios Gizas	293
Bacterial Interaction with Uranium, Thorium and Lanthanum: Process Characterization And Application in Bioremediation. Pinaki Sar, Sufia K Kazy, S K Das, S F D'Souza	294

Phytoremediation

Field Study of the Potential of Six Weed Species for Lead Phytoremediation. Sarah Bloch, Barbara Kramer	295
Uptaking of Metals from Aquatic Systems by <i>echinodorus amazonicus</i> . Zehra Sapci ZENGİN, Beyza USTUN	300
Study of Safe Soil Amendments to Enhance Lead Phytoremediation. Sarah Bloch, Barbara Kramer .	305
Pb, Zn, Cd Hyperaccumulation of <i>Arabis Paniculata</i> Franch: Hydroponic Culture Yetao Tang, Rongliang Qiu, Xiaowen Zeng, Fangming Yu	306
The Effect of Zinc and Cadmium on Organic Acids and Proteins in <i>arabis paniculata</i> franch Xiaowen Zeng, Rongliang Qiu, Yetao Tang	306
Investigation of Pb and Cd Accumulation Mechanism on <i>Brassica Juncea</i> Callus. Ryuji Takeda, Toru Yamada, Nobuhiko Sugiura, Kayo Minami, Sadao Komemushi, Akiyoshi Sawabe	307
Physiological Characterization of Phytoremediation of Mercury and Organomercurials in Chloroplast Transgenic Plants. Hussein S. Hussein, Norman Terry, Henry Daniell, Oscar N. Ruiz	307
Development of a Hyper-Accumulator System for Mercury Phytoremediation Oscar N. Ruiz, Henry Daniell	308

PERSISTENT ORGANIC POLLUTANTS

Degradation of Persistent Organic Pollutants

Water Content Effect on Gaseous Diffusion Coefficient of Trichloroethylene in Porous Medium. Solenn Cotel, Véronique Barthes, Patrick Baussand, Gerhard Schafer, Franck Marot	310
Dechlorination of Hexachlorobenzene by Using Nanoscale Iron and Nanoscale Bimetallic Particles. Yang-hsin Shih, Yao-Cyong Chen	318
Kinetic and Mechanistic Considerations in the Field Of Monoterpene Thermal Isomerization. Achim Stolle, Bernd Ondruschka, Matthias Findeisen	325
Influencing Factors of Radiation Degradation of 4-Nitrophenol. Jun HU, Jianlong WANG	330
Assessment of Persistent Organic Pollutants (POPs) In the Mediterranean Coastal Environment of Egypt Alaa R. Mostafa, Nadia B. El Sayed, Assem O. Barakat, Terry L. Wade, Stephen T. Sweet	337
Bioremediation of a Former Dry Cleaner Using Potassium Lactate. Yimin Fu, Richard S. Keenan	338

Studies on the Biodegradation of Phenols by Sequential Batch Reactor. <i>Shams Qamar Usmani, Suhail Sabir, Izharul Haq Farooqi, Masood Ahmad</i>	338
Toxicity of 2,4-Dcp on 4-Cp Biodegradation by a Mixed Enrichment Culture. <i>Erkan Sahinkaya, Filiz B. Dilek</i>	339
Combined Electrochemical and Sub-Critical Water for Degradation of O-Xylene. <i>Feridoun Salak Asghari, Hiroyuki Yoshida</i>	340
A Comparative Economic Analysis of the Treatment of Refinery Spent Caustic. <i>Raafat Alnaizy</i>	340
Treatment of Vegetable Oil Industry Wastewater with Iron Electrodes: Parameters Effects on The Degradation Process. <i>Umran Tezcan Un</i>	341

GIS, DATA MANAGEMENT AND REMOTE SENSING

GIS for Environmental Assessment

Utilization of Surface Elevation, GIS, and Discharge Data to Analyze River Loading. <i>Sarath Chandra K. Jagupilla, David A. Vaccari, Richard I. Hires</i>	343
Iron mental Impact Assessment of Urban Expansion Using Remote Sensing and GIS Techniques. <i>Atiqur Rahman</i> and S. P. Aggrawal	349
Towards Sustainable Development for Groundwater in Arid Region and the Role of Geographic Information Systems. <i>Yousef. Y. Al-Dakheel, Massoud. A. Massoud</i>	364
Potential Assessment of Annual Medic Cultivation and Extension in Iran by GIS Technique. <i>A. Ariapour, A. Torknezhad</i>	371
Evaluating Phosphorus Transport through Comprehensive Research and Applied GIS Technology. <i>Carla J. Landrum, Bryan Tapp, Cas Bridge, Ean Garvin, Melissa Barton, Robert van Waasbergen</i>	372
Implementation and Performance Evaluation of WRF - CMAQ Predictions Using Geographic Information System and Field Observational Data. <i>Jayakumar Indracanti, Venkata Srinivas Challa, Robert L. Hughes, Julius M Baham, Chuck Patrick, Monica Rabarison, John Young, Shelton Swanier, Yerramilli Anjaneyulu</i>	373

Data Management and Environmental Remote Sensing

Remote Water Quality Monitoring And Assessment Using High Resolution Remotely Sensed Data. <i>Mahtab A. Lodhi</i>	374
Fog Monitoring in Northern India Using NOAA AVHRR Data. <i>S.P.S. Kushwaha, V.K. Dadwal, Kunwar K.V. Singh</i>	380
Mapping a Complex Landscape with National Vegetation Classification Protocols Using CIR Photography. <i>Amina Rangoonwala, Elijah Ramsey III</i>	380
Mapping the Invasive Species, Chinese Tallow With Eo1 Satellite Hyperion Hyperspectral Data. <i>Amina Rangoonwala, Elijah Ramsey III</i>	381

ENVIRONMENTAL ANALYSIS AND MEASUREMENTS

Environmental Analytical Technologies

The Sea Water BOD Biosensor Using Salt-Tolerant <i>Dietzia Maris</i> Isolated from Nature <i>Cui Jiansheng, Wang Xiaohui, Ma Li, Wei Fusheng</i>	383
Overview of the Chemical and Microbiological Quality of Bottled Water in Kuwait. <i>Humood Al-Mudhaf, Abdel-Sattar Abu-Shady, Ali Diab</i>	388
Easy Quantitative Evaluation of Heavy Metals in the Soils and Paddy-Rice. <i>Kazuaki Nakagawa, Ryuji Takeda, Daisuke Shimizu, Yuhei Wakabayashi, Sadao Komemushi, Akiyoshi Sawabe</i> ...	397
Evaluation of Chemical Composition Analysis Methods for Characterization of PM2.5. <i>Luyi Ding, Fred Ke, Teresa AuYeung, Daniel Wang, Tom Dann</i>	397
³¹ P NMR MAS and XRPD Analysis of Phosphorus in Biosolids	

<i>Charles Shand, Steve Hillier, Sandy Chudek</i>	398
Develop a Q-PCR Approach for Quantification of Hydrogenase Gene from <i>clostridium acetobutylicum</i> . <i>Razia Kutty, George N. Bennett</i>	398
Determination of Water-Soluble Organophosphorus Herbicides by Liquid Chromatography/ICP-MS <i>Zhongxian Guo, Qiantao Cai, Zhaoguang Yang</i>	399
Mixed Oxides of Titanium and Niobium Thin Films as Ammonia Sensors at Room Temperature <i>Teerada Bubphamala, Rye Terrell, Geoffrey B. Saupe</i>	399

Field Measurements Technologies

Amperometric HRP Biosensor Based on SWNTS and Organic-Inorganic Hybrid Material. <i>Yu Yang, Zhao Lin, Tan Xin, Li Ruopu, Dong Tao</i>	400
Using ANN for Estimating Pollutant Load from Optical Sensor Measurement. <i>Minghuan Liu, Tadaharu Ishikawa, Kenji Yoshimi</i>	411
Composite Sampling for Improved Hot Spot Detection. John H. Carson Jr.	417
Monitoring, Detection, and Control of Combined Sewer Overflows Using Embedded Sensor Networks. <i>Jeffrey W. Talley</i>	418

Environmental Monitoring

Development and Monitoring Of Mesoporous Vanadium Catalysts under Visible Light. <i>Yasuo Izumi, Kazushi Konishi, Dilshad Masih, Hideaki Yoshitake</i>	419
Significance of Passive Samplers (Pocis) for Water Monitoring of The River Tall. <i>Jaswinder Kaur, Anthony Gravell, Samuel H Mitchell</i>	425
Variations of Radon Progeny Concentrations at Two Climatically and Geologically Different Areas in India. Manmohan Singh Heer, Kulwant Singh, Surinder Singh, Papp Zoltan	426
HRP-Based Amperometric P -Benzoquinone Biosensor. <i>Seyda Korkut, Elif Erhan, Mevra Yalvac Can</i>	426

SOCIETY AND THE ENVIRONMENT

Society and the Environment

Effects of Regulation and Technology on U.S. Nonfuel Mineral Commodities. Grecia R. Matos	428
Locales Restiveness as an Emerging Phenomenon in Engineering Projects Execution in Nigeria. <i>Akpan, A. J., Akpabio, J. U. H</i>	434
Public Concerns and Their Implication for Planning and Development in Lake Hengshui. <i>Ruopu Li, Lin Zhao, Tao Dong, Xin Tan, Yang Yu</i>	440
An Ngo-Led Environmentally-Sound Urban Settlement Program for Dwellers Displaced By Agri-Industries in Iloilo City, Philippines. Victor Prodigio, <i>Alain Russ Dimzon, Joussan Dolar</i>	440

Environmental Ethics and Education

Environmental Education in Macedonian High Schools: An Analysis of New Curriculum Content. <i>Mile Srbinovski, Joy Palmer, Murtezan Ismaili, Alajdin Abazi</i>	441
Engineering Ethics Case Study Related to Reducing Erosion from Construction Site. Steve Starrett ...	447

ENVIRONMENTAL PLANNING AND MANAGEMENT

Environmental Quality and Planning

Environmental Impact Assessment – A Special Reference to Kota Thermal Power Station, Rajasthan, India. Pooja Puar	449
Effects of Plantation Activity on Vegetation Pattern around Corbett National Park, India.	

<i>Divya Gupta</i>	465
Dredging Practices in the Coastal Region of Nigeria and Its Effect on the Environment. Akpan A. J. .	472
Energy-Related Environmental Problems	
Nationalization of the Biomass <i>In Natura</i> Gasification Technology. <i>Suani Teixeira Coelho,</i> Sílvia M ^a S.G.Velásquez, Sandra M ^a A. dos Santos, Beatriz A.Lora	486
Wood Fuels and Rural Energy Security: A Case of Mount Kilimanjaro, Tanzania <i>Martin Herbert Kijazi, Shashi Kant</i>	490
Exploring Potential Benefits of Renewable Energy under CDM in India. <i>Niraj Ramavat, Vijaya Gupta</i>	496
Environmental Policy and Management	
Software Development for Environmental Planning. <i>José Manga, Nelson Molinares, Augusto Sisa, Jairo Castañeda</i>	497
Implementation of the EU's Bathing Water Directive in Turkey. <i>U. Yetis, H. Yukseler, S. Valatka, D.Semeniene, M. Kerestecioglu, M. Jacobsen</i>	501
Establishing a Unique Academy within the Confines of a Wetland in Nigeria. Akpan, A. J.	508
Beyond Fossil Fuels: Converting Wind At Sea to Low-Cost 'Green' Electricity with Cost-Effective Floating Windfarms. Yih-Ho Michael Pao	517
Sustainable Development	
Sustainability Analysis for the Excellence Development Zone (EDZ) In Palermo, Colombia. <i>José Manga, Nelson Molinares, Jorge Arrieta</i>	518
Elements of a Sustainable Engineering Science. Ibrahim Al-Khattat	522
Changes in Cropping Patterns in Nepalese Mountain Farming: Environmental and Socioeconomic Consequence. Krishna. R. Tiwari, Bishal. K. Sitaula, Roshan. M. Bajracharya, <i>Trond Børresen</i>	527
The Effect of Type of Marginal Land Use on the Production of Biomass and Plant Diversity. A. Ariapour, F. Amiri, Sh. Afrougheh	534
Integrated Approach to the Analyses of Traffic Congestion, Travel Time and Travel Time Reliability for Applications to Urban Sub Sahara Africa. Michael Agina	541
Sustainable Energy and Transportation: Engineering in the 21 st Century. Mark Holtzaple	542

INTRODUCTION

The Third International Conference on Environmental Science and Technology 2007 was held in Houston, Texas, USA, August 6-9, 2007. The Program included 15 sections, containing 60 sessions with approximately 580 platform and poster presentations. This conference series strives to provide a platform for an extremely diverse group of environmental topics for engineers and scientists from around the world.

Authors of the presentations accepted for the program were invited to submit their papers to the Conference Organizing Committee. More than 200 papers were received and then reviewed by the editors, session chairs, and the members of the Scientific/Technical Committee of the conference. Those papers and abstracts accepted for publication were assembled into two volumes.

Sections are arranged basically according to their order listed in the original program except the sessions entitled *Bio-Assessment and Toxicology* and *Modeling*. This exception was made to balance the length of the two volumes.

Environmental Science and Technology 2007 (I) contains the following sections:

- Water Pollution and Water Quality Control
- Air Pollution and Air Quality Control
- Bio-Assessment and Toxicology
- Modeling

Sections included in *Environmental Science and Technology 2007 (II)*:

- Land (Soil, Waste Solid) Pollution and Remediation
- Ecosystem Restoration
- Wetlands
- Sediments
- Global Change
- Metals
- Organic Pollutants
- GIS, Data Managements, and Remote Sensing
- Environmental Analysis and Measurements
- Society and the Environment
- Environmental Policy and Management

We would like to especially thank the session chairs who were instrumental in the success of the conference.

The Conference was sponsored and organized by the American Academy of Sciences, with financial contributions from the co-sponsors and supporting organizations.

The papers in these proceedings represent the authors' results and opinions. No sponsors, co-sponsors, participating organizations or editors should be construed as endorsing any specific contents or conclusions in the proceedings.

Steven K. Starrett, Ph.D., P.E., D.WRE
Kansas State University

Jihua Hong, Ph.D.
American Academy of Sciences

Robert J. Wilcock, Ph.D.
National Institute of Water & Atmospheric Research
New Zealand

Qilin Li, Ph.D.
Rice University

John H. Carson, Ph.D.
Shaw Environmental Inc.

Samantha Arnold, Ph.D.
Golder Associates (UK) Ltd
UK