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## Preface

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**Biographical notes:** V.K. Garg is working as Reader in the Department of Environmental Science and Engineering, Guru Jambheshwar University of Science and Technology, Hisar, India. His teaching and research include solid waste management, drinking water pollution with special reference to fluoride and nitrate, wastewater treatment using adsorption technology, ferti-irrigation and herbicide resistance. The research carried out till date has credited him with more than 170 publications including books (1), chapters in the books/proceedings (15), original and reviewed papers (International 60, National 30), research communications in conferences/symposia (35). He continues to serve as peer reviewer for several international journals.

Suman Mor is currently working as an Assistant Professor in the Department of Environment and Vocational Studies, Panjab University, Chandigarh, India. She obtained a PhD from Indian Institute of Technology, Delhi, India with specialisation in 'Solid Waste Management'. She has contributed to more than 15 peer reviewed international papers and also wrote a book in the field of 'Environmental Science'. She is serving as a referee to various international/SCI journals.

Yung-Tse Hung received his PhD Degree in Environmental Engineering from the University of Texas at Austin. His BSCE and MSCE Degrees are from National Cheng Kung University, Taiwan. He has been a Professor of Civil and Environmental Engineering at Cleveland State University since 1981. He has taught at 16 universities in eight countries. His research interests are biological

waste treatment, industrial waste and hazardous waste treatment. He is Editor of *International Journal of Environment and Waste Management* and *International Journal of Environmental Engineering*, and Editor-in-Chief of *International Journal of Environmental Engineering Science* (IJEES).

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*Special issue:* The challenge of attaining the sustainable development is probably one of the most pressing issues facing the world today. The limited energy supplies, increasing energy consumption, inappropriate industrialisation, water scarcities, soil degradation, declining land productivity, desertification, dwindling resources and environmental pollution are resulting in major environmental crises in different parts of the world. Solid Waste Management (SWM) is a critical environmental management and public health issue around the globe. The importance of SWM as a public health and environmental protection issue derives partly from the ubiquity of solid waste in the human environment, attendant degradation of aesthetic and scenic quality, high environmental pollution and public health hazard potential of constituents of solid waste. We are happy to present eight excellent research papers related to solid waste management in this special issue.

Composting and vermicomposting are biological processes which generally require inexpensive equipment and are environmentally sustainable practices. First five papers deals with solid waste management by composting or vermicomposting technology. In first paper, *Champagne and Westman* have reported the land application and passive stabilisation of pulp and paper biosolids. The results indicated that it is possible to stabilise the biosolids to the levels similar to that achieved via composting through prolonged exposure to natural conditions. In India, about 4 million tonnes per year of the leafy waste from vegetable market and households is produced. As a step towards its management, *Kumar et al.* have reported the anaerobic digestion of mixed vegetable market waste in a laboratory-scale digester. The results showed that after 41 days, 0.15 m<sup>3</sup> of biogas (methane content = 68.4%) per kg of total solid was produced with a maximum gas production rate of 650 ml hr<sup>-1</sup> on day 25. The chemical oxygen demand was reduced approximately 65%. *Yadav and Garg* have reported the use of vermicomposting technology for food industry wastewater treatment plant sludge. The results showed that *Eisenia fetida* earthworm species was unable to survive in 100% sludge. Addition of some other organic waste to sludge is necessary during vermicomposting. The authors recommended that if 30% sludge is mixed with biogas plant slurry then there is no adverse effect on the quality of vermicompost. *Gupta and Garg* have reported the possibility of nutrient recycling from different solid organic wastes namely, sewage sludge, textile mill sludge, sugar mill sludge and aquatic weeds employing an epigeic earthworm *Eisenia fetida*. Biodegradability coefficient (K<sub>b</sub>) is highest in aquatic weed followed by sewage sludge, textile mill sludge and sugar mill sludge. Results also showed that worm growth is 2.5 times more in aquatic weed waste than in sugar mill sludge. *Saini et al.* have reported the relative efficacy of two species (*Eudrilus eugeniae* and *Eisenia fetida*) of earthworms in biodegradation of organic wastes under semi-arid subtropical conditions of North-West India. Based on the experiment results authors reported that *Eisenia fetida* is more suitable as a vermicomposting worm in subtropical areas of India, as compared to *Eudrilus eugeniae*.

Hyperspectral imaging, traditionally used for earth remote sensing applications utilising aerial or satellite image data. But *Serranti and Bonifazi* have investigated the potential of this technique for the characterisation of solid waste particles based on the hypothesis that waste materials characteristics can be detected analysing their surface spectral response when properly energised by a suitable source. Selected case studies related to different solid waste recycling sectors (glass recycling, fluff from car dismantling and bottom ash from solid waste incinerator), in which the application of hyperspectral imaging can be profitably utilised have been described.

Municipal Solid Waste (MSW), especially in major cities, is one of the most challenging city problems on the part of city managers. *Damanhuri et al.* have investigated the solid waste recycling potential of *Bandung Municipality (Indonesia)* and proposed that the data generated in this research can be used by Bandung city in developing the MSW management policy in the future.

The use of MSW landfills as bioreactors in which leachate is introduced back into the landfill is getting much attention these days. Operating landfill in the bioreactor mode promotes rapid stabilisation of the waste and volume reduction, improving leachate and gas management. *Kumar et al.* have reported the effect of repeated leachate recycling on leachate characteristics at a landfill in New Delhi (India). The results showed that the leachate recycling offers advantage in attenuating some pollutants in the leachate; however, more than two leachate-recycling passes may not be beneficial in terms of the leachate contaminant attenuation. The results indicate that leachate recirculation can act as a possible leachate management option for landfills that do not have any leachate treatment facilities.

The Guest editors are thankful to all the authors for contributing their valuable research for this special issue on 'Solid Waste Management'. We also take the opportunity to record our appreciation for all the reviewers for their suggestions and support which helped us to make the decisions on the submitted manuscripts.