
Keynote Forum October 03, 2019

Recycling 2019



7th International Conference on
Recycling and Waste Management

October 03-04, 2019 | Melbourne, Australia

Recycling and Waste Management

October 03-04, 2019 | Melbourne, Australia



Jae Park

University of Wisconsin-Madison, USA

Innovative use of scrap tires in pollution control

Almost one billion scrap tires are generated and recycled, creating almost \$8 billion of revenue worldwide. With stricter regulations, the market for the recovery and recycling of scrap tires is increasing at the rate of 4.5% annually. The three largest segments are fuel, civil engineering applications, and ground rubber markets. Recently, tire-derived aggregates (TDAs) are being widely used for civil engineering applications. The rubber used in manufacturing tires were found to adsorb toxic organic compounds and heavy metals. In addition, steel wires in tires are capable of removing phosphorus present in the environment. Various sizes of scrap tires can be used in a golf course as a substitute for aggregates and an adsorbent for removal of pesticides and fertilizers. A 20-cm thick tire rubber layer was found to be capable of removing $\geq 90\%$ for 37 out of 51 pesticides evaluated. By using scrap tires for the mitigation of pesticides and fertilizers, golf courses may be able to realize the dual benefits of waste utilization and reduced environmental contamination. A preliminary design was performed for a golf course where one million scrap tires stockpiled in a landfill are used. TDAs are good materials for stormwater management systems. TDA can hold twice more water and provide 75% lower cost than stone when used as underground water storage. TDA can also be used as an eco-friendly zone by treating roadway runoff in the bioswale. Recently, more steel wire

exposed TDA was proposed for phosphorus removal from agricultural runoff. More case studies will be presented.

Speaker Biography

Jae Park is a Professor of the Civil and Environmental Engineering Department at the University of Wisconsin-Madison. He received a B.S. in Civil Engineering at Yonsei University in 1977 and a M.S. in Environmental Engineering at Seoul National University in 1979. He worked as a consulting engineer in Korea and Australia for two years after serving two and a half years of military service. He received a Ph.D. in Public Health Engineering at the University of Newcastle upon Tyne, United Kingdom in 1985. He worked as a research engineer at the Sanitary and Environmental Health Research Laboratory, University of California, Berkeley from 1985 to 1988.

Since he joined University of Wisconsin-Madison in 1988, he has taught environmental engineering courses such as water treatment plant design, wastewater treatment plant design, biological treatment, physical/chemical treatment, hazardous waste management, solids and hazardous waste engineering, industrial water pollution control, etc. His research is in the areas of water quality management and river restoration; biological treatment of toxic organic compounds; biological nutrient removal, hazardous waste treatment; mass transport in the environment; fate of organic compounds in water and wastewater treatment processes; computer-aided design of water and wastewater treatment plants; and reuse of scrap vehicle tires as a contaminant sorbent. He has published one book and over 200 journal articles. He has been a consultant to many governments, institutions, utilities, and companies from all over the world.

e: jkpark@wisc.edu

Recycling and Waste Management

October 03-04, 2019 | Melbourne, Australia



Serena Caucci

UNU-FLORES, Germany

Wastewater and water reuse management: A catalyzer for resource recycling transformation

Water quality criteria are an indispensable part of water recycling projects aiming to ensure the protection of public health and the environment. In addition, criteria can affect the development, public acceptance and the economic viability of water recycling projects. Currently no uniform criteria exist, but they diverge, often greatly, between countries/states. In this talk, we briefly present the evolution of recycling criteria worldwide and discuss emerging issues related to ecological and public health risks that have not addressed adequately in existing criteria. We will focus both on EU countries. In EU countries their water recycling framework and the lack of water recycling criteria cause of implementation delay will be introduced while good practices and advanced research on water reuse management will be discussed especially in the frame of agricultural uses, direct and indirect.

Capacity development schemes are instead fundamental to introduce smart and safe management strategies for water reuse. For the 70 percent of middle- and low-income countries in rural areas, agriculture is the main source of income and employment. In parts of the Global South, agriculture has transformed the region economically. But depletion and deterioration of water and land resources pose serious

challenges in sustaining this development. Using wastewater as an economic asset makes of the safe use of wastewater in agriculture (SUWA) as a cost-effective way to sustainably manage resources recycling and ensure healthy produce. This talk will bring to discussion the subject of wastewater management, focusing on the management and business aspect of the issue and analyze potential repercussions for the development of a smart agriculture. The description of good-practice examples experienced internationally will complement the scientific base of natural resource management. The interdependencies within the Water-Soil-Waste will be highlighted and Nexus thinking as catalyzer for the transformation of resource recycling defined.

Speaker Biography

Serena Caucci works as a Senior Research Associate at UNU-FLORES, in the field of waste recycling and wastewater management. Skilled in capacity development in multi-stakeholder projects worldwide on water reuse in agriculture and has developed international collaborations in the field of microbiological risk assessment related to environmental pollution management. Before joining UNU-FLORES, she worked at the Institute of Hydrobiology of Technical University of Dresden and at the Helmholtz Center for the Environment (UFZ) on issues of wastewater management and antibiotic resistance in anthropogenic environment.

e: caucci@unu.edu

Recycling and Waste Management

October 03-04, 2019 | Melbourne, Australia



Mervat El-Hoz

University of Balamand Faculty of Engineering, Lebanon

Municipal Solid Waste Management practices and its relation to Climate Change

Municipal Solid Waste Management (MSWM) has become one of the most complex global environmental issues for urban areas in different countries of the world. It was considered the third largest source of methane in the environment, accounting for approximately 3-4% of global anthropogenic greenhouse gas emissions. MSW is a very complex system, and misuse of any technology or disposal may contaminate soil and water with chemicals and lead to climate change. This paper examines the challenges of MSWM faced by developed and developing countries and how policies are implemented in practice. Investigations have been conducted to understand the factors and barriers affecting the MSWM in developing countries and the causes that make developed countries successful in this sector. Low-income countries have the highest proportion of organic waste, while in high-income countries; it mostly consists of inorganic substances. The study found that IMSWM has many stakeholders and municipalities are subject to social, political, institutional, financial, economic and technical factors as well as land availability. By addressing all these factors, municipalities should move to the smart waste treatment, which includes the circular economy approach to their waste policies. Solid waste minimization, separation at the source and recycling should be implemented, given the

high rates of recyclable materials. Any technology should take into account appropriate infrastructure, pollution control system, maintenance, development and follow-up of the requirements and regulations of the country. Achieving that will not be easy and the involvement of all stakeholders and with full coordination among them will be required.

Speaker Biography

Mervat El-Hoz is the Chairperson of Environmental Engineering Program at the Department of Civil and Environmental Engineering of the University of Balamand, Lebanon. She graduated from the Middle East Technical University, Turkey as Environmental Engineer and obtained her PhD from the University of Sydney, Australia in the same field. She received many international and national Honors and Awards in the field of Solid Waste Management and Environmental in general. She is Author of over 100 scientific publications in international journals and conference proceedings: scientific papers, key-note speaker lectures, chapters in books and technical reports. She is a member of the Editorial Board of many International Journals, and scientific committees in international conferences 2002. She is a guest lecturer at various universities in the United States and the Arab countries. She served as senior environmental expert at the World Bank, Council for Development and Reconstruction on Solid Waste / Environmental Management, Lebanon (1998 – 2002); as an environmental expert, local coordinator, technical leader and trainer for EU, UNDP, and USAID projects in solid waste, water, wastewater, and air pollution.

e: Mervat.Elhoz@balamand.edu.lb