allied academies

7th International Conference on

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 ≥ 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