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Category: Water, Wastewater & Stormwater

232972 - Microorganism Removal in Permeable Pavement Parking Lots in Edison Environmental Center, New Jersey

Tuesday, May 23

8:30 AM – 5:30 PM

Stormwater discharges can have significant negative impacts on receiving water bodies and create human health concerns as they typically contains pathogens, nutrients, sediments, and toxic chemicals. Stormwater is commonly treated by stormwater control measures which include wet ponds, wetlands, bioretention areas, dry detention basins, permeable pavements, rain gardens, and proprietary devices. Permeable pavement is an infiltration system in which stormwater runoff infiltrates into the ground through a permeable layer of pavement or other stabilized permeable surface. Permeable pavement has been shown to effectively reduce numerous types of pollutants, yet their ability to remove microorganisms is not well known. Three types of permeable pavements, installed in a parking lot at the Edison Environmental Center, Edison, New Jersey, were monitored to evaluate their removal of indicator bacteria such as fecal coliform, E. coli, and Enterococci. The effects of season on infiltrate concentrations and removal of indicator bacteria were also evaluated. Preliminary results showed that porous asphalt performed very well compared to porous concrete and permeable interlocking concrete pavers and the concentrations of organisms in the infiltrate from porous asphalt were below the water quality standard. Neither rain intensity nor temperature have any effect in both concentration of organisms and performance of permeable pavement.

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Dr. Ariamalar Selvakumar has more than 30 years of experience working in the environmental engineering field. She is currently an environmental engineer with U.S. EPA Urban Watershed Management Branch in Edison, New Jersey. She holds a Ph.D. in Civil and Environmental Engineering from New Jersey Institute of Technology (1989) and a M.Eng. in Environmental Engineering from Asian Institute of Technology, Bangkok, Thailand (1984). She also holds a B.Eng. (Hons.) in Civil Engineering from University of Peradeniya, Sri Lanka (1980). She is a registered professional engineer in the states of New Jersey and New York. Her current research interests are rehabilitation of aging water infrastructure and effectiveness of green infrastructure. She has authored, co-authored, or presented a combination of more than 80 peer-reviewed journal articles, conference proceedings, posters, and U.S. EPA reports.