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ABSTRACT

Factors that Influence Fecal Indicator Microbe Levels

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Fecal indicator microbes have been traditionally used for regulatory purposes to assess the quality of recreational beach waters. The detection of elevated levels of fecal indicator microbes are usually followed by beach closures or advisories due to presumed health risks. However, recreational water quality standards have been developed from studies at sites characterized by point sources of sewage contamination, a source known to contain human pathogens and an abundance of fecal indicator microbes. Increasing evidence suggests that sewage is not the only source of fecal indicator microbes and that this group of microbes is capable of regrowth within the environment, specifically within soils. Many researchers have indicated that local climate plays a role in the regrowth phenomena. Regrowth is most prevalent in freshwater systems that are characterized by limited flushing; however, regrowth has been observed in marine systems. The predominant characteristics of the sediments that appear to facilitate regrowth are sediments characterized by elevated organic content and by relatively shallow embankments that are periodically wetted and dried such as during storm events and varying tidal cycles. Shallow embankments provide for a large change in surface area in contact with the water relative to a small change in tidal height. Regrowth thus represents an additional non-point source of fecal indicator microbes to the environment in addition to the conventional sewage and animal sources. Of interest is to determine whether elevated levels of fecal indicator microbes from regrowth are correlated with human health. During this presentation, data will be presented to support the observations above. Furthermore, future plans will be described for a study focused on evaluating human health effects from a beach site characterized by non-point sources of fecal indicator microbes.

Presentation: Oral

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Biography: Dr. Helena Solo-Gabriele received her Ph.D. degree in Civil and Environmental Engineering from the Massachusetts Institute of Technology in 1995. Since this time she has been employed by the University of Miami with a current rank of Associate Professor. Her research areas are diverse and include: 1) microbes in water, 2) water flows within the Everglades watershed, and 3) metals in pressure treated wood. The common thread among her research lines is environmental measurements. Her work in “microbes in water” focuses on identifying sources of indicator microbes to the environment. She has conducted indicator microbe studies in Ft. Lauderdale, Key West, and Miami-Dade County, Florida and her presentation today will focus on “common threads” observed among these studies.