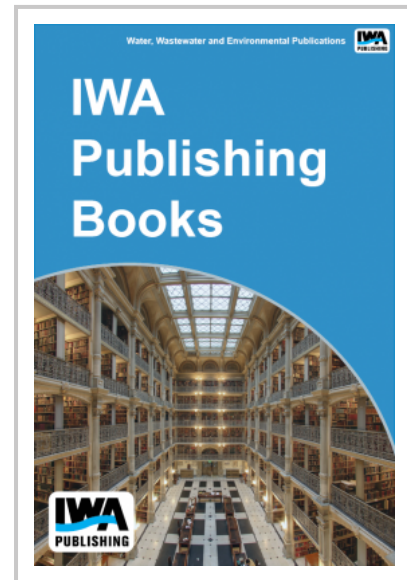


# Development of a Protocol for Risk Assessment of Microorganisms in Separate Stormwater Systems

Recent research has shown that the concentrations of microbial indicator organisms (e.g., fecal coliforms) in stormwater may be quite high. However, studies have not clearly established relationships between the concentrations of indicator organisms and microbial pathogens in stormwater, or between stormwater indicator organism concentrations and illness. Thus, it is difficult to interpret indicator data collected by local public agencies in the context of potential risk to human health. The primary objective of this investigation was to generate guidance to enable more accurate and defensible evaluations of stormwater microorganism data and the associated risks to human health from exposure to microbial pathogens in stormwater.

The investigation consisted of three major tasks: reviewing and summarizing relevant published literature, conducting a web-based data questionnaire and developing a science-directed data collection plan. Topics discussed include: 1) waterborne pathogens that pose the greatest risk to human health, 2) concentrations of pathogens and indicator organisms observed in stormwater, 3) defensible relations between indicator organisms and pathogens of public health concern in stormwater, 4) the environmental fate of pathogens and indicator organisms in stormwater, 5) the use of microbial source tracking (MST) techniques to identify sources of fecal contamination, and 6) the effectiveness of stormwater microorganism control technologies and associated costs.

Additionally, recommended next steps needed to enable defensible evaluations of stormwater microorganism data and the associated risk to human health from exposure to stormwater are presented. Next steps include the development of interim guidance for management prioritization, pathogens enumeration method development, and pilot and nation-wide data collection programs.



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