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Evaluation of a TaqMan™ Based Quantitative Polymerase Chain Reaction Assay as a Rapid Method To Quantify Enterococcus in Recreational Water

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Current methods for assessing the microbiological safety of recreational waters require monitoring for fecal pollution indicator organisms such as *Escherichia coli* and *Enterococcus*. Decisions regarding beach closures rely on enumeration of these organisms after 24 hours of growth on selective media. Based on a 100mL sample of fresh water, *Enterococcus* numbers larger than 61 or *E. coli* numbers larger than 235 typically result in beach closure. However, due to the dynamic quality of recreational waters, results reported 24 hours after sampling are not necessarily indicative of the current microbiological status of the site. To alleviate this lag in reporting, we tested a TaqMan™ based quantitative polymerase chain reaction (qPCR) assay as a rapid method of detecting *Enterococcus* species in recreational water samples from Lake Erie and Lake Ontario. Results of quantitative PCR analyses, completed in less than 4 hours, were expressed in terms of calibrator cell equivalents (CCEs). Numbers of CCEs were compared quantitatively to most probable numbers of enterococci determined using Enterolert™, an EPA-approved detection method. Statistical analysis indicated that, based on an action level of 61 culturable enterococci/100 mLs, closing beaches having CCEs of 921 or higher would be the correct action 88% of the time.