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Use of Spatial Sampling and Microbial Source-Tracking Tools for Understanding Fecal Contamination at Two Lake Erie Beaches: Usgs Scientific Investigations Report 2006-5298

By Mark Sweeney, Eid Galal Abo Hamza, Donna S Francy

Proquest, Umi Dissertation Publishing, United States, 2011. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.Source-tracking tools were used to identify potential sources of fecal contamination at two Lake Erie bathing beaches: an urban beach (Edgewater in Cleveland, Ohio) and a beach in a small city (Lakeshore in Ashtabula, Ohio). These tools included identifying spatial patterns of *Escherichia coli* (*E. coli*) concentrations in each area, determining weather patterns that caused elevated *E. coli*, and applying microbial source tracking (MST) techniques to specific sites. Three MST methods were used during this study: multiple antibiotic resistance (MAR) indexing of *E. coli* isolates and the presence of human-specific genetic markers within two types of bacteria, the genus *Bacteroides* and the species *Enterococcus faecium*. At Edgewater, sampling for *E. coli* was done during 2003-05 at bathing-area sites, at nearshore lake sites, and in shallow ground water in foreshore and backshore areas. Spatial sampling at nearshore lake sites showed that fecal contamination was most likely of local origin; *E. coli* concentrations near the mouths of rivers and outfalls remote to the beach were elevated (greater than 235 colony-forming units per 100 milliliters (CFU/100 mL)) but...



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