

**Survey of Pathogenic Bacteria in Bottom Sediments of Iloilo River:
An Assessment of Water Sanitary Quality**

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ABSTRACT

This study assessed the water sanitary quality of the Iloilo River by determining the monthly heterotrophic plate count (HPC), total coliform (TC), fecal coliform (FC), and fecal streptococcus (FS) counts of the bottom sediments in five sampling sites from October 2008 to February 2009. These parameters were then correlated with the physico-chemical parameters that were additionally obtained from the river water. The presence of *Salmonella* spp., *E. coli*, *Vibrio* spp., and fecal *Streptococcus* were also determined as indicators of the pathogenic bacteria in the bottom sediments of the Iloilo River. Using the FC:FS ratio, the study further distinguished fecal contamination sources from each site as human, animal, or mixed in origin. An assessment of sediment quality was done using DENR standards for TC and Kohl and Albinger's sediment quality criteria for HPC and FC. Sediment samples were taken from the following sampling sites along the Iloilo River: 1) Forbes, 2) Dungon, 3) IBRD, 4) Carpenter's, and 5) So-oc.

No significant difference in any of the physico-chemical or microbiological parameters were found among sampling stations. However, analysis and comparison of the microbiological parameters of bottom sediments in terms of months showed significant temporal variability. HPC, TC, and FC alternately decrease and increase every month while FS showed a generally increasing trend. The following correlations between the microbiological and physico-chemical parameters were found: 1) temperature with HPC and FS, 2) salinity with FS count, and 3) dissolved oxygen concentration with TC and FC Counts.

The mean percentage of bottom sediment samples with *Salmonella* ranged from 3% to 10% while more than half of samples from all sampling sites showed the presence of *Vibrio* spp. and *S. faecalis*. Samples with *E. coli* from all sites ranged from 3 to 14%.

Fecal contamination sources varied across sampling sites. So-oc showed mostly animal sources as its origin of fecal contamination, while other sites had either animal, human or mixed sources.

S. faecalis and *E. coli* exhibited multiple antibiotic resistance, a growing health concern in many of today's rivers. All isolates were susceptible to Gentamicin and Ciprofloxacin but resistant to Penicillin.

Based on HPC and FC values the degree of loading with easily decomposable organic substance and feces among the sampling sites ranges from very little to little. TC count of the sediment samples from all the sites does not exceed the limit of 5000 CFU/ 100ml set by the DENR. Results suggest that sediments were not a significant reservoir of bacterial pollution at the time this study was conducted.