WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: VI4421

Title: Applicable Indicators of Risk for Coastal Waters in Tropical Environments: Phase II

Focus Categories: Water Quality, Waste Water

Keywords: Water Quality Standards, Water Quality Monitoring, Water Quality, Viruses, Risk Analysis, Recreation, Marinas, Lagoons, Coastal Zone, Biomonitoring, Beaches, Bays, Bacteria

Start Date: 04/01/2001

End Date: 03/01/2002

Federal Funds: $32,500

Non-Federal Matching Funds: $0

Congressional District: N/A

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Abstract

Although indicators of the biological contamination of waters have been used for the last 100 years, these indicators have been shown to lack certain characteristics to properly protect public health. This is especially so in tropical areas of the world, where the presence of these indicators may not necessarily be related to contamination. We propose to study some of these indicators (e.g. Escherichia coli, Clostridium spp.) to try to determine, via molecular fingerprinting, if isolates can be grouped in terms of their sources (e.g. animal, human or environmental).

The project entitled Applicable Indicators of Risk for Coastal Waters in Tropical Environments was previously funded by the USGS and we are proposing continued funding. This will allow us to complete several tasks at hand and to be able to expand the project to include molecular fingerprinting data on several isolates from fecal and environmental sources. Our data have demonstrated that it may not be possible to use E. coli fingerprinting to differentiate fecal from non-fecal sources, thus we will concentrate on other genes of interest and alternate indicators of fecal contamination.

Coastal waters will be tested for the presence of Clostridium spp. using a medium recently developed by a commercial source. Molecular fingerprinting will be attempted for Clostridium spp. isolated from environmental, human and animal fecal sources. This portion of the project should allow us to see if in fact differences can be determined among human and animal isolates by using this methodology. Microbial fingerprints will also be included as part of the database being accumulated as indicated in Phase One of the project. It should be noted that this will be the first time molecular fingerprinting will be done on different isolates of Clostridium spp.