Dr. Portier has conducted research in the field of aquatic & marine microbiology/microbial physiology of extreme environments for the past 30+ years. His pioneering research in remediation has linked applied microbiology research with environmental toxicology, particularly of impacted industrial sites in the coastal wetland microenvironment. These risk-based remediation approaches for contaminated water and soils/sediments has alleviated the problems associated with industrial activity and the recovery of lost habitat for new development. Some of his major accomplishments include: the development of bioremediation protocols for soil, sediment and groundwater that have become standard operating procedures for USEPA, USDOD and countries in the Americas and Europe; the first successful biotreatment nationwide of contaminated sites using LSU technology for RCRA and Superfund; the application of these approaches in the remediation of industrial and abandoned sites in Louisiana and nation-wide; national and international awards for technology development and implementation; and the development of the DeTox Culture Repository (one of the largest university collections of microorganisms for remediation of soil, water and groundwater in the world. (11,000 isolates +)

**Abstract:** The high costs of conventional remedial techniques and the liability associated with the use of such techniques, has encouraged industry to search for innovative remediation technologies. Innovative technologies providing cost-effective and permanent treatment are gaining the attention of regulatory agencies, public, and the industries responsible for cleanup. To address these needs, research organizations and engineering firms are testing various innovative technologies in laboratories and in the field. Bioremediation is gaining more and more acceptance and has proven to be a cost-effective mitigation strategy. Bioremediation methods and/or technologies are broadly classified as *ex situ* or *in situ* processes. *Ex situ* methods require physical removal of contaminated material prior to the initiation of the treatment process. *In situ* approaches involve treatment of contaminated soil sediment and or groundwater “in place.” Since bioremediation is a mitigation tool used for treating contamination in heterogeneous environments with complex phase separation of many materials by relative water solubility, the ability to successfully mitigate without physical removal and transportation to another location with its inherent risks of recontamination is desirable. A few case studies, including mitigation statistics, will be presented for successful *ex situ* and *in situ* industrial sites using technologies and methodology developed by our group at LSU.