

## Treatment of Produced Waters Using a Surfactant-Modified Zeolite/Vapor-Phase Bioreactor System

FEW02FE20

### Program

This project was funded through DOE's Natural Gas and Oil Technology Environmental Program in support of Produced-Water Management.

### Project Goal

The goal is to characterize and optimize the Surfactant-Modified Zeolite (SMZ) primary and secondary regeneration processes to enable long-term operation of the SMZ process for a wide range of produced water applications.

### Performers

Los Alamos National Laboratory (LANL)  
Los Alamos, NM

University of Texas  
Austin, TX

### Project Results

SMZ has been studied and characterized, providing an improved understanding of how the zeolite works for use in the vapor-phase bioreactor (VPB).

### Benefits

SMZ processing will facilitate onsite treatment of produced water, which will allow significant reduction in operating costs for oil and gas producers.

### Background

SMZ is an innovative filtration/sorption medium that has been shown to remove contaminants such as BTEX (benzene, toluene, ethylbenzene, and xylenes) from produced waters. Cost-effective operation of an SMZ requires a method of regenerating the SMZ on-ite. Evaluation and design of the regeneration method for the SMZ process was not fully addressed in previous research at Los Alamos and the University of Texas.

### Project Summary

The project worked on the development of the VPB in conjunction with the University of Texas. Analysis of the waste gas composition in the VPB was completed. The performance of the VPB is undergoing testing.

### Current Status (October 2005)

The project was conducted informally as part of the research with ongoing projects at the University of Texas.

**Project Start:** January 10, 2003

**Project End:** February 1, 2006

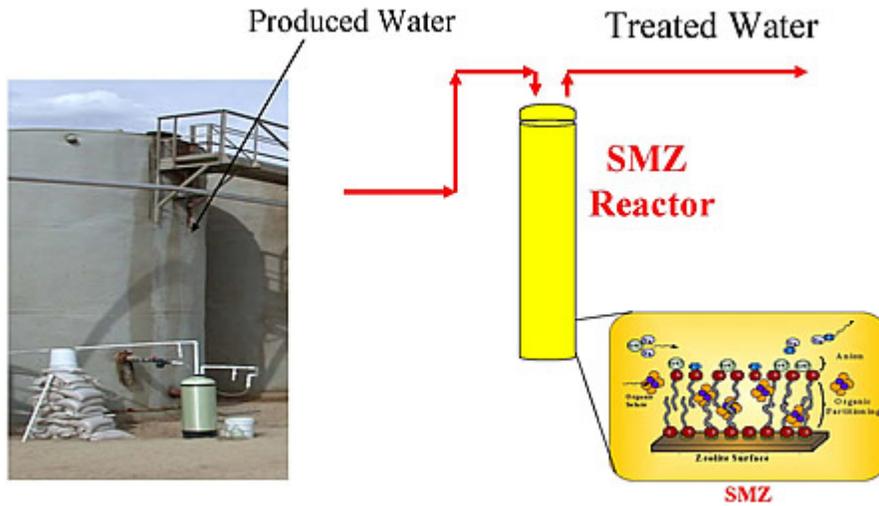
**Anticipated DOE Contribution:** \$156,000

**Performer Contribution:** \$0 (0% of total)

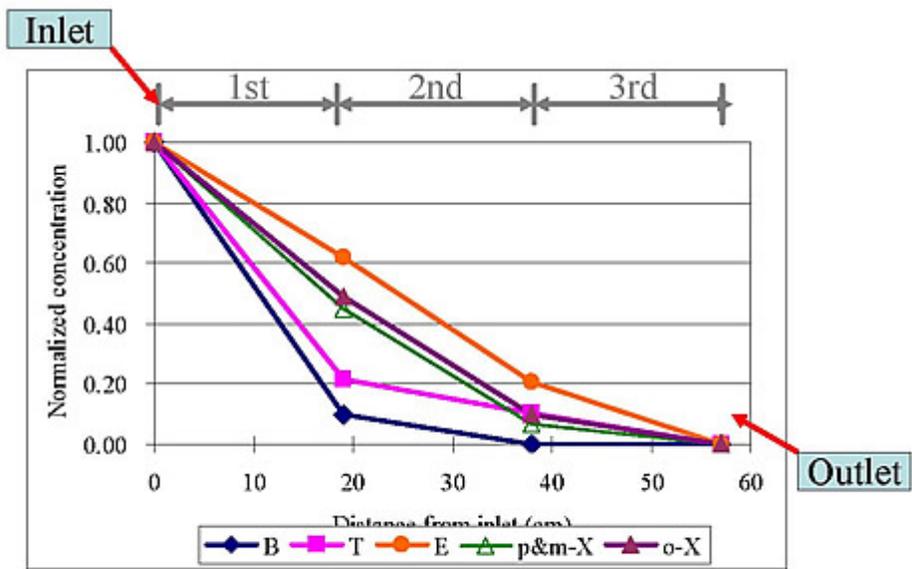
### Contact Information

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LANL - Enid Sullivan ([ejs@lanl.gov](mailto:ejs@lanl.gov) or 505-667-2889)



Vapor-phase bioreactor with surfactant-modified zeolite membrane.



Removal Profile across the Column on Day 73

Removal profile across the column on day 73.