



## WATER RESOURCES RESEARCH GRANT PROPOSAL

**Project ID:** 2003IA37B

**Title:** Fate of Veterinary Antibiotics in Manure Lagoons

**Project Type:** Research

**Focus Categories:** Water Quality, Toxic Substances

**Keywords:** Antibiotics, pharmaceuticals, fate, sorption, biodegradation, water quality

**Start Date:** 03/01/2004

**End Date:** 02/28/2005

**Federal Funds:** \$18,500

**Non-Federal Matching Funds:** \$37,676

**Congressional District:** IA 4

**Principal Investigator:**

Say Kee Ong

### **Abstract**

In the mass production of livestock, veterinary antibiotics are extensively used for disease control and growth promotion. One of the major users of veterinary antibiotics is the swine industry. Recent studies have shown that wastewater lagoon samples and ground water samples collected near waste lagoons contained antibiotics at concentrations that may have potential impact on humans and aquatic life. At this time, not much is known about the persistency and accumulative potential of these antibiotics in waste lagoons and in the environment. The objective of this study is to investigate the fate of two commonly used antibiotics, tetracycline and sulfamethazine, in manure lagoons. Batch experiments simulating manure lagoon conditions will be conducted to investigate the sorption of antibiotics onto sludge and the anaerobic biodegradation of antibiotics. The impact of various conditions such as pH, dissolved salts and ammonia concentrations on sorption and degradation will be studied. A direct benefit of the proposed research is an understanding of the fate of veterinary antibiotics in manure management facilities and their impact on surface and ground water.