

ENVIRONMENT

Title: Protocol Development for Measurement of Trace Gases Associated with Manure Storage and Odor – **NPB# 00-004**

Investigator: Wendy Powers

Institution: Iowa State University

Date Received: 10/31/2001

Abstract

Quantification of odorous compounds associated with livestock odors has been difficult in the past due to sensitivity limitations of available instrumentation. Advances in instrumentation have helped to some extent although for many potential contributors to malodor instrumental detection limits still exceed that of the human nose. Equally important to instrumentation development in quantification efforts is the selection of the method used to capture, transport, and analyze air samples. Solvent extraction and solid phase microextraction (SPME) were compared for their ability to adsorb compounds in air samples collected from livestock facilities (n = 128). Sampling occurred from August – September 2000 and again from May – June 2001. Five different solvent extraction tubes, in duplicate, were used, each comprised of different materials thereby having affinity for various compound classes. Tube contents were extracted using both hexane and methanol to represent the range in solvent materials. The SPME samplers used were coated with carboxen and polydimethylsiloxane. Results showed that adsorption of air to a single SPME sampler eluted more compounds than that observed from the combination of all five solvent extraction tubes. The SPME fibers, although more expensive than the solvent tubes, are reusable and require less labor in addition to avoiding the accumulation of solvent materials that require proper disposal.

These research results were submitted in fulfillment of checkoff funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer reviewed

For more information contact:

National Pork Board, P.O. Box 9114, Des Moines, Iowa USA

800-456-7675, **Fax:** 515-223-2646, **E-Mail:** porkboard@porkboard.org, **Web:** <http://www.porkboard.org/>