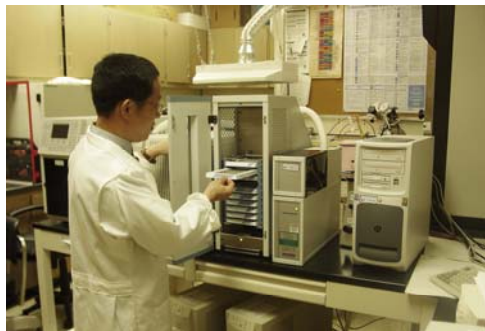


Gaseous Emissions from Intensive Animal Feeding Operations

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BACKGROUND

Public concerns about the environmental effects and, to a lesser extent, the possible health effects of air emissions from animal feeding operations have grown with increasing size and geographic concentration of these operations. Public concerns have also grown as the population, both former urban dwellers and expanding cities, have moved into what have previously been largely, rural farming areas. Objectionable odors from animal feeding operations are a significant concern not only to the new residents in these areas, but also to many long-time residents. Various components of these gaseous emissions may contribute to potential health effects (hydrogen sulfide) and can contribute environmental degradation such as reduced regional air quality through increased levels of inhalable particles and reduced visibility, and eutrophication of water bodies (caused by ammonia) or climate change (induced by the greenhouse gases; methane and nitrous oxide).



Dr Xiong Chen loads a tray of thermal desorption tubes into an Markes Ultra-Unity automated thermal desorption system attached to a Varian 3800 Gas Chromatography / Mass Spectrometry system for the analysis of odorous components of gaseous emissions.

OBJECTIVES

- To obtain accurate baseline measurements of gaseous emissions from facilities under varying seasonal and operational conditions
- To develop a quantitative understanding of factors affecting the emission rate
- To develop techniques and management strategies for economically controlling emissions of undesirable gaseous pollutants

POTENTIAL BENEFITS / OUTCOMES

- Conservation of valuable nutrients and organic matter to be returned to the land as fertilizer and soil amendments which would otherwise be lost as gaseous emissions
- Improved local and regional air quality through reduced emissions of particulate precursor gases
- Improved global air quality through reduced emissions of greenhouse gases
- Better community relations through reduced odor impact on the communities in areas around animal feeding operations.