EPA United States Environmental Protection Agency

National Air Emissions Monitoring Study

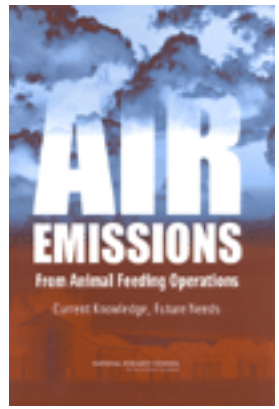
Agricultural Waste Air Emissions Advisory Group
Wisconsin Department of Natural Resources
April 7, 2010

Landscape

- Animals being concentrated
- Public air quality complaints abundant
- Lawsuits increasing against farms
- CAA applicability confusing
- Political fallout likely for either inaction or heavy-handed control

Agreement Overview

- EPA & USDA asked National Academy of Science (NAS) to conduct the AFO air emissions study
- NAS study conclusions:
  - No reliable emission factors for AFO exist
  - Additional data needed to develop estimating methodologies
  - Current methods for estimating emissions not appropriate
  - Use process-based approach
- Consent agreement developed in response to:
  - Public concerns
  - NAS report
- Consent agreement developed by:
  - EPA
  - Industry representatives
- Agreement coordinated with:
  - Agricultural industry representatives
  - State & local government officials
  - Environmental organizations
  - Citizen groups

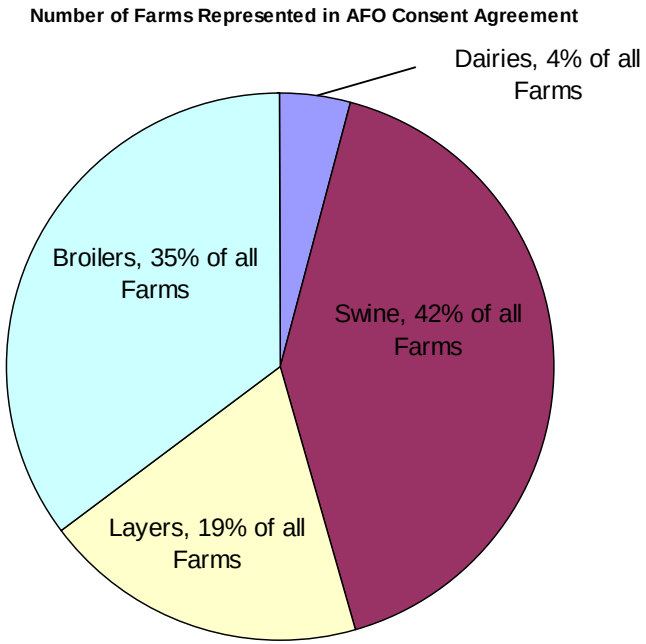


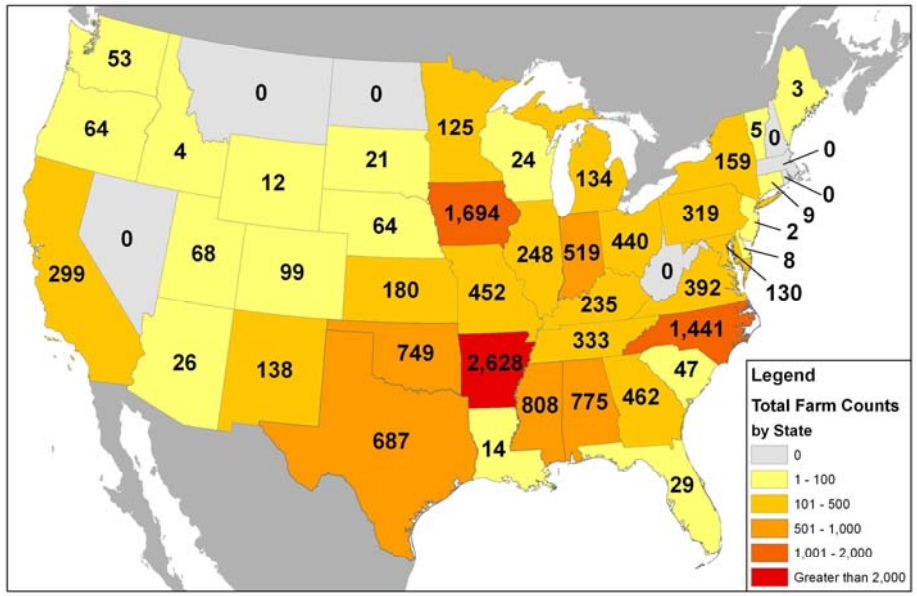
Agreement Overview (cont)

- What is the Agreement? Voluntary consent agreement open to contract growers and integrators. Industry agrees to pay to conduct emissions testing. Targeted AFO sectors:
  - Swine
  - Poultry
    - Layers
    - Broilers
    - Turkey
  - Dairy
- Federal Register Notices:
  - Signed on Jan. 21, 2005
  - Published on Jan. 31, 2005 (70 FR 4958)
  - "Initial" public comment period closed on March 2, 2005
  - Re-opening comment period from April 1 through May 2, 2005
  - Extending signup period to July 1, 2005

Monitoring Study - Signups

- EPA received approximately 2,700 agreements representing over 13,000 farms.





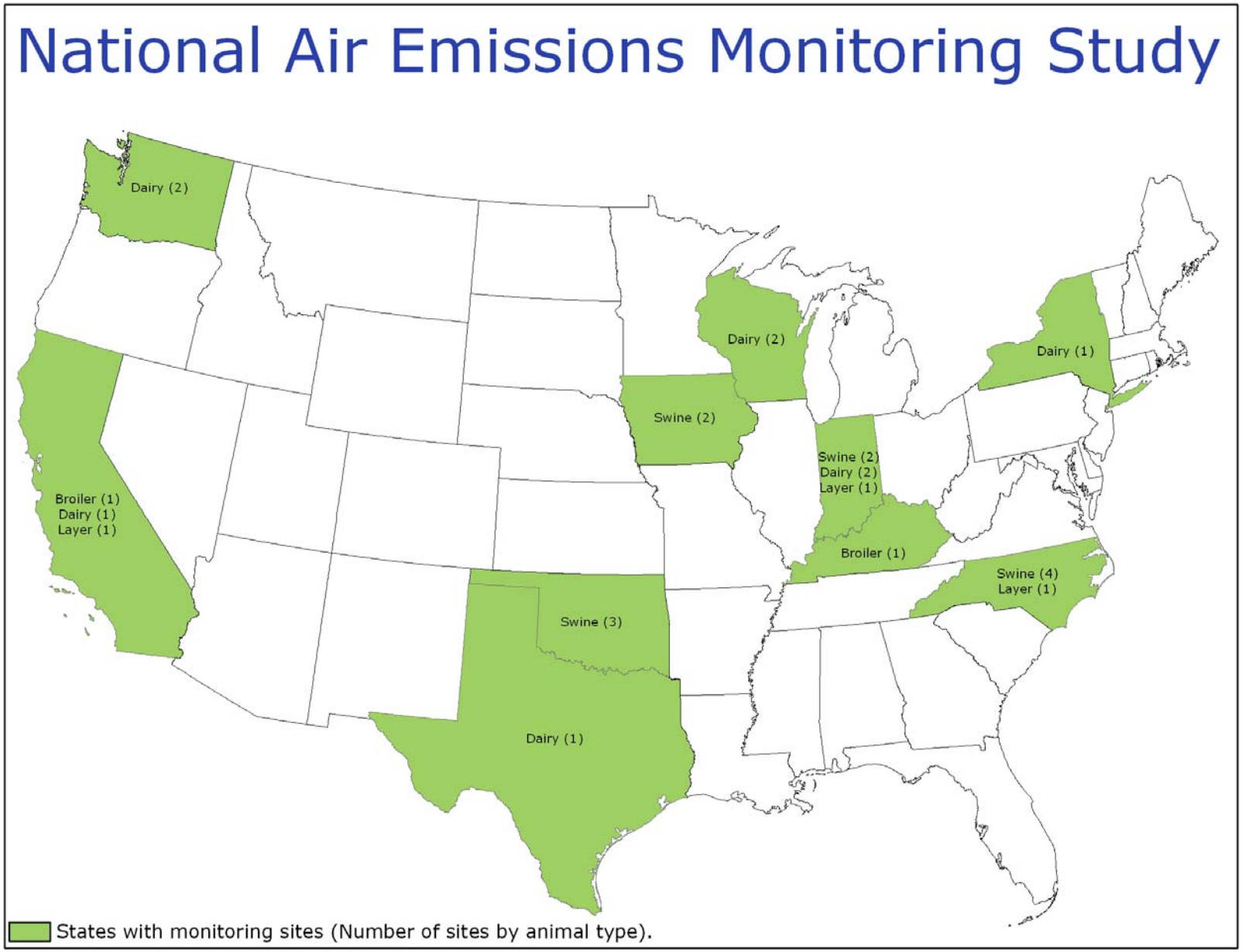
Monitoring Study - Overview

- Purpose: gather data for developing emission estimating methodologies
- Funding provided by participating AFOs - $14.8M
- Monitor for:
  - Particulate matter
  - Hydrogen sulfide
  - Volatile organic compounds
  - Ammonia
- Data made available to the public

Monitoring Study – Site Selection

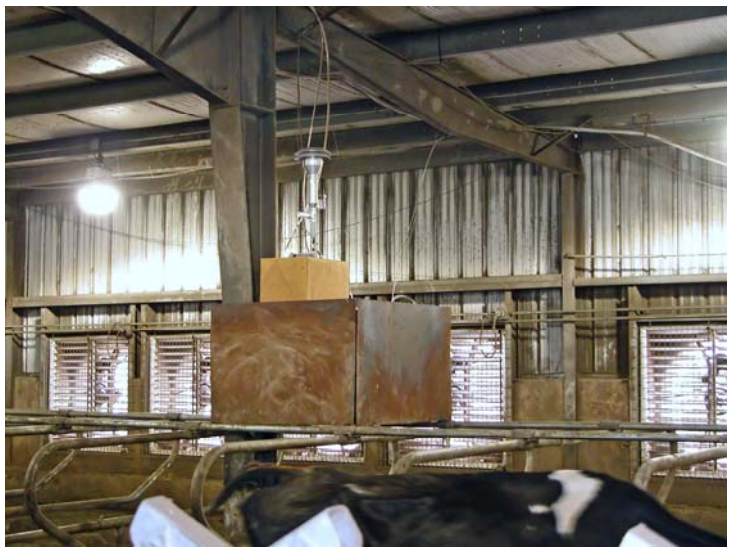
- Focuses on three AFO sectors
  - Swine
  - Poultry
  - Dairy
- Types of operations
  - Sow, nursery, finisher (swine)
  - layers, broilers
  - Dairy
- Manure Management Techniques
  - Liquid system
  - Solid system
- Regional representation
- Proximity to principal investigators

National Air Emissions Monitoring Study



Monitoring Study – Work Plan Development

- EPA approved the monitoring plan & sites:
  - On November 29, 2006
  - Plan included:
    - Quality Assurance Project Plans (1 each for lagoons and barns)
    - Standard Operating Procedures (76 unique SOP's)
  - 24 monitoring sites approved



Monitoring Study – The Challenges

Changing Climatic Conditions

Partially Enclosed and Naturally Ventilated

Large Open Sources

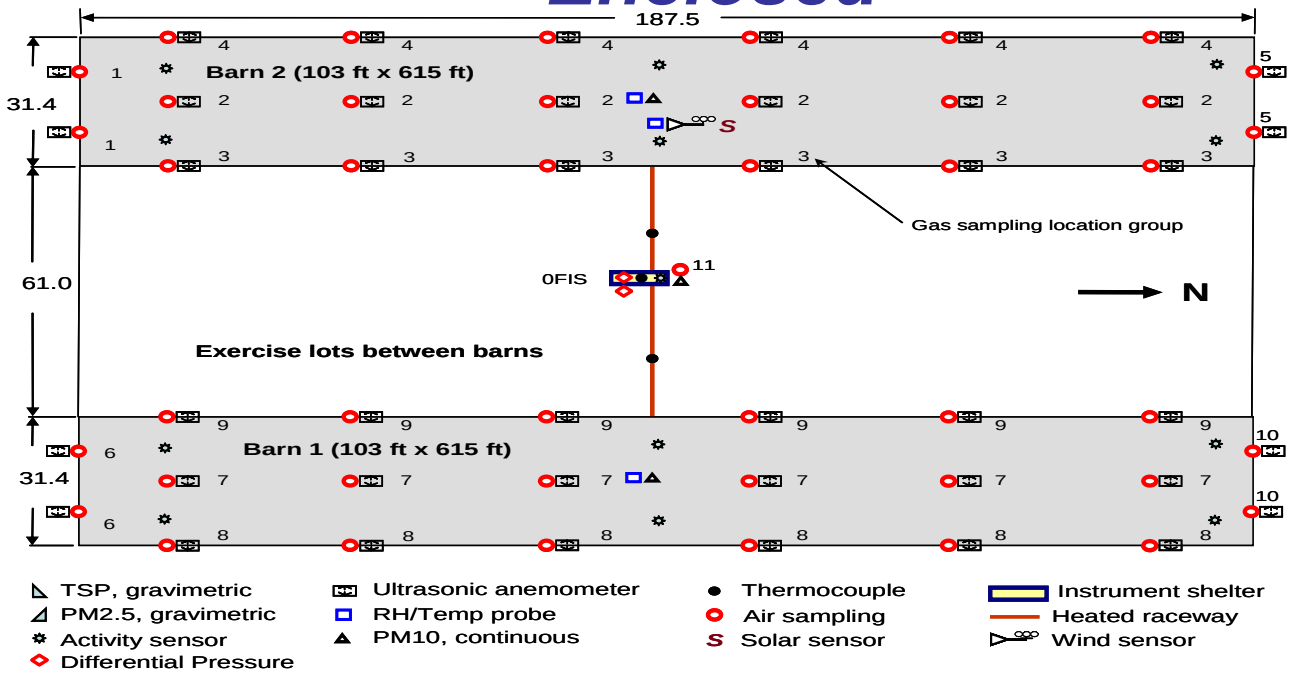
Animal Movements

Changing Feed Rations

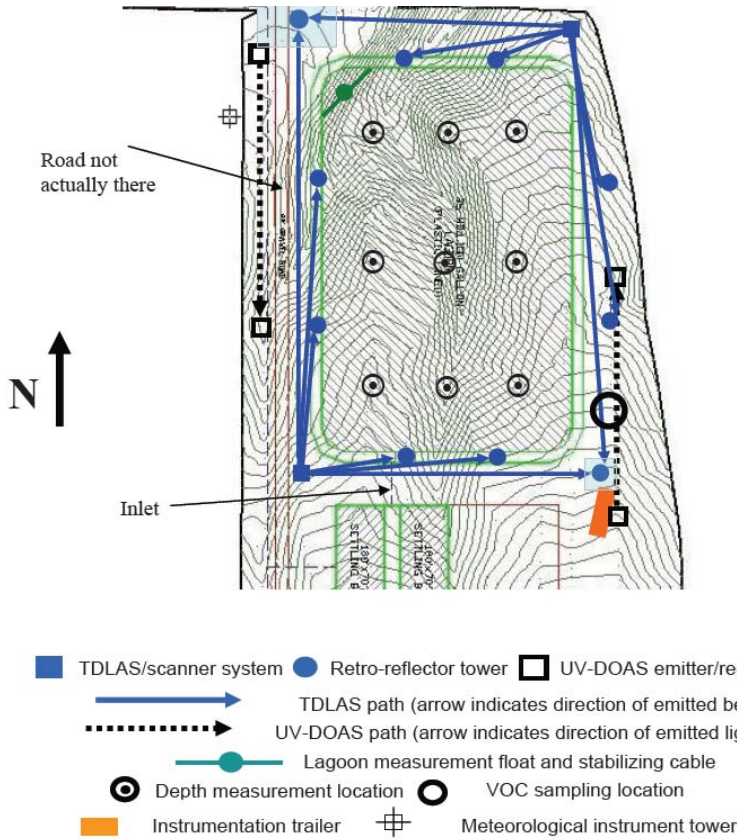
Monitoring Study – Overcoming The Challenges

- Changing Climatic Conditions
  - –Regional Representation
  - –Continuous Monitoring
  - –Heated Sampling Lines
- Partially Enclosed and Naturally Ventilated Structures
  - –Numerous Emission Sampling Points
  - –Multiple meteorological sampling points
  - –Monitor Mostly Mechanically Ventilated Buildings
- Large Open Sources
  - –Use Open-Path Measurement Techniques ($$$)
  - –Monitor on a quarterly basis to keep cost down
- Changing Feed Rations
  - –Sample Feed
  - –Continuous Monitoring
- Animal Movements
  - –Attempt to track animals electronically
  - –Continuous Monitoring

Approach to Naturally Ventilated & Partially Enclosed

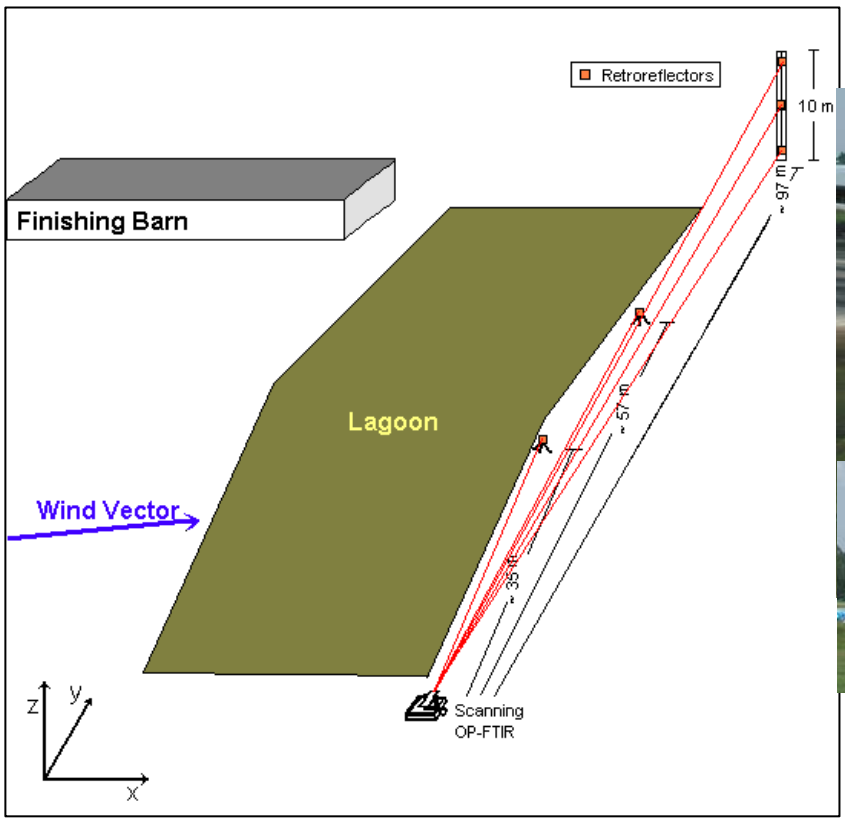


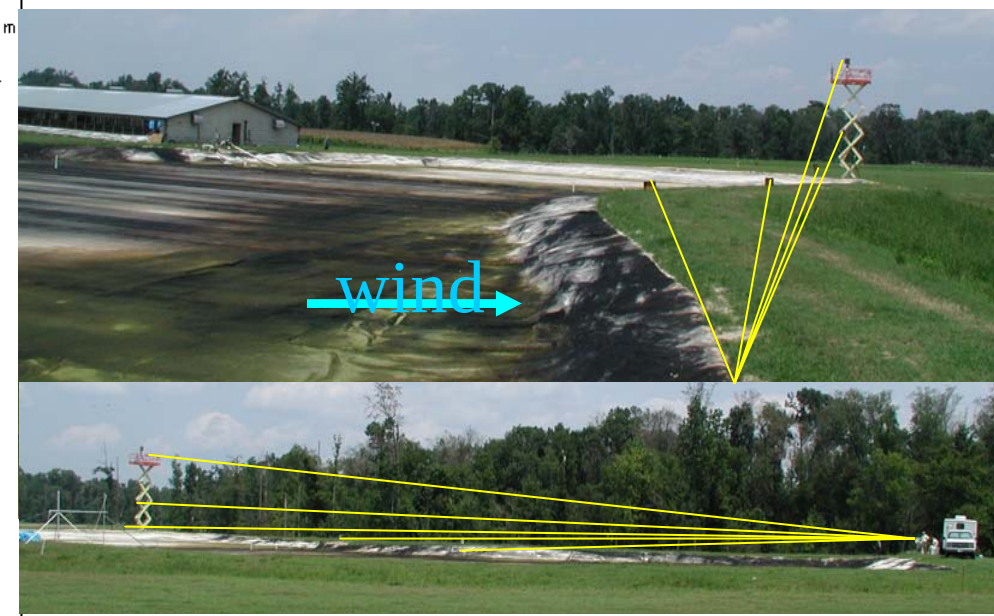
Approach for Large Open Sources



Approach for Large Open Sources

Open-Path FTIR Concept





What's Next?

- Data Collection Complete
- Complete data analysis and publish Emission Estimating Methodologies – 18 months after completion of data collection
- Participants must comply with any applicable requirements – 120 days after publication of Emission Estimating Methodology

Goals for Next 2-3 Years

- Settle issues of CAA requirements
  - Emission estimation (e.g., emission factors, potential to emit)
  - Source definition
  - Applicability cutoff (i.e., size cutoff)
  - Fugitive/non-fugitive
  - Control technology effectiveness
  - Monitoring, reporting and recordkeeping

Thanks.

Questions?