

AMBIENT AIR MONITORING AND POULTRY HOUSES FACT SHEET

Purpose:

Through a partnership involving the Department of the Environment (MDE), the Keith Campbell Foundation for the Environment (Foundation) and the Delmarva Poultry Industry (DPI) an air monitoring project will be undertaken on Maryland's Lower Eastern Shore to collect data on ambient air quality to learn more about how air quality near poultry houses compares to other areas of Maryland. The focus of this monitoring will be for MDE to collect data on levels of ammonia and particulate matter in the ambient air.

Background:

There has been concern expressed in a number of forums about the possible impact on human health stemming from exposure to ammonia and particulate matter from poultry operations. In recognizing this concern and in acknowledging there is not adequate information available on the levels of these pollutants on the Lower Eastern Shore of Maryland, the poultry industry, represented by DPI, the Foundation and MDE agreed to gather ambient air quality data for the two main pollutants of concern.

The Project:

- The monitoring project will involve four air monitoring stations. Two new stations will be located on the Lower Eastern Shore and will be funded by the Foundation. One station will be downwind of a concentration of poultry houses and the other will be upwind. Each new station will be equipped with ammonia and particulate matter (both PM-2.5 and PM-10) monitoring instrumentation. Meteorological measurements (wind speed, wind direction, temperature, relative humidity, barometric pressure and precipitation) will also be measured at each site to aid in the interpretation of the measured pollutant concentrations.
- Two of MDE's existing monitoring stations that currently measure for fine particulate matter will be retrofitted with an ammonia monitor. The added equipment will be funded by DPI. These two stations will serve to measure background levels of ammonia and fine particulate matter for areas not directly near poultry operations. The two non-Lower Shore locations are likely to be at an existing station in Baltimore City and in Dorchester County at an existing station at Horn Point.
- Ammonia concentrations will be monitored utilizing a Teledyne-API Model T201 chemiluminescence analyzer that gives stable and repeatable continuous real-time measurements at very low levels. This instrument is based on the Federal Equivalent Method (FEM) for nitrogen dioxide. Particulate matter, both PM-2.5 and PM-10, will be monitored utilizing a Teledyne-API Model 640X PM mass monitor. This instrument is a Federal Equivalent Method and uses scattered light spectroscopy for continuous, real-time PM measurement.

The instruments operate continuously and produce information on PM-2.5 and ammonia concentrations on a minute-by-minute basis. The monitors will be housed in portable shelters connected to electrical power to meet the electrical demands of the equipment and the heating/air conditioning units that are needed to maintain an environmentally controlled environment (to avoid equipment overheating and to avoid creating condensation) so as to ensure stable and accurate readings.

A strict schedule of preventive maintenance, operational checks, daily calibration checks, periodic audits and a minimum of bi-weekly precision checks will be maintained to insure that any problems are addressed in a timely manner and that the highest possible quality data is being produced. The instrument outputs are monitored remotely by MDE on a daily basis, which allows for potential data deficiencies to be uncovered and corrected in a timely manner.

MDE will continue to operate and collect all data at its two existing stations, including the added ammonia monitoring instrumentation, and will contract out, but oversee, the operation of the two new monitoring stations to the University of Maryland Eastern Shore's Department of Natural Sciences, which is a part of the School of Agriculture and Natural Sciences. MDE will also specify the equipment to be used at both new and existing monitoring stations. All data collected by the University's Department of Natural Sciences at the new stations will be the property of MDE.

- Air monitoring data collection is intended to take place for a period of one year and will begin soon after a site is selected and secured and equipment is installed and calibrated. Our expectation is that collecting data will start late summer.
- The Foundation and DPI will pay for the equipment. MDE will conduct all other aspects of the project such as equipment selection, monitoring location, data collection and analysis, and reporting.

Site Selection:

In order to gather meaningful data and satisfactorily fulfill the purpose of the project, the two new monitoring stations needed to be in the vicinity of a concentration of poultry houses and meet a number of technical requirements, applicable to other monitoring efforts undertaken by the MDE, and certain non-technical items, as detailed below:

- The poultry operation selected needs to:
 - be in a location where MDE could locate upwind and downwind monitoring stations so that air sampling would be reflective of conditions that have led to concerns over health impacts and
 - be as representative as possible of poultry operations throughout the Lower Shore.
- The two new monitoring site locations would need to meet, as closely as possible, monitoring station siting criteria that the federal Environmental Protection Agency has developed for states to follow when siting ambient air monitoring stations for determining compliance with national ambient air quality standards. This is needed so the air flow around a monitoring station is not unduly influenced (need to avoid creating stagnant air or having air getting directed around a monitor) by natural or man-made structures.
- Security and the availability of a power supply for the two new stations need to be considered.
- Public input for the site selection will be solicited.

Post Data Collection Actions:

Gathering ambient pollution concentration data on the Lower Eastern Shore and comparing it to data gathered from elsewhere in Maryland is a first step in determining whether poultry operations adversely affect ambient air quality. Depending on the outcome of the comparison, future steps may be needed. Any decisions by MDE regarding future efforts will be made after all data is collected and evaluated.

The data collected will be summarized by MDE and a report produced that would include a raw data summary, the mentioned data comparison and any analysis of the collected data and the attendant meteorological information. The data and the report will be made available to the public. By virtue of the data being made public, anyone is free to use it for further research or analysis. A sample of the type of data analysis that is typically used and which would likely be developed for this project is attached to this fact sheet.

The equipment shelters, the monitors and the meteorological towers will have a useful life beyond this particular project. They will be available for further use by MDE or other approved entities upon request. The shelters that house the equipment are moveable, so they can be relocated.