Texas AgriLife Research  
Texas Water Resources Institute

Evaluation of Electrostatic Particle Ionization and BioCurtain Technologies to Reduce Dust, Odor and other Pollutants from Broiler Houses  
FY 2010 – Poultry Program  
TSSWCB Project No. 10-90

Quarter no. 4 From 12/1/2010 Through 2/28/2011

I. Abstract

The second sampling trip aimed at testing the EPI and BC systems under cold weather conditions was conducted on December 7, and data from the trip is currently being evaluated by BAEN. In an attempt to meet spending deadlines set by the funding agency, an attempt was made by all involved personnel to spend as much of the funding for the project as possible during this quarter, which was successful for the most part. Deliverables that were accomplished during the period include submission of the 2nd draft of the interim costs & management report. It was determined that additional information was still needed, so the final draft of this report will be submitted during the next quarter.

II. Overall Progress and Results by Task

TASK 1: Project Administration

Subtask 1.1: TWRI will prepare electronic quarterly progress reports (QPRs) for submission to the TSSWCB. QPRs shall document all activities performed within a quarter and shall be submitted by the 15th of March, June, September, and December. QPRs shall be distributed to all project partners.

The following actions have been completed during this reporting period:

A. TWRI submitted the fourth QPR for this project on March 15, 2010.

50% Complete

Subtask 1.2: TWRI will perform accounting functions for project funds and will submit appropriate Reimbursement Forms to TSSWCB at least quarterly.

The following actions have been completed during this reporting period:

A. TWRI received invoices totaling $72,676.54 during the quarter. This also includes invoices received but not yet documented in the last quarter on 11/30.

B. As of November 15, 2010, a total of $150,524.51, or about 89% of total project funds have been expended.
C. TWRI requested a budget revision for the project on February 8, 2011.

89% Complete

Subtask 1.3: **TWRI will participate in meetings as appropriate in order to efficiently and effectively achieve project goals, coordinate monitoring efforts and summarize activities and achievements made throughout the course of this project.**

The following actions have been completed during this reporting period:

A. TWRI hosted a project update meeting on February 23, 2011 to discuss general project progress, the next steps for the project, and concerns with the budget.

50% Complete

Subtask 1.4: **TWRI will develop, host and maintain a project website that will be used as a means to disseminate educational materials, project updates and notify readers about educational opportunities.**

The following actions have been completed during this reporting period:

A. The Poultry Odors BMPs website is currently active. It can be found at [http://poultrybmps.tamu.edu/](http://poultrybmps.tamu.edu/). Since the website went online, it has been viewed by a grand total of 33 unique visitors.

B. This quarter, the website was viewed by:
   - 7 unique visitors in December 2010
   - 3 unique visitors in January 2011
   - 6 unique visitors in February 2011

80% Complete

Subtask 1.5: **TWRI will work with project personnel from BAEN and SFA to support the preparation of technical reports as required by project Tasks into published technical reports. These reports will be housed in the TWRI online Reports Database indefinitely.**

The following actions have been completed during this reporting period:

A. BAEN prepared fixed and variable costs of operating the automated electrostatic particle ionization system and the BioCurtain™ and submitted it to TSSWCB for review on February 24, 2011. Additional content was requested, so the report will be submitted again upon insertion of additional content during the 5th quarter.

45% Complete

**TASK 2: Quality Assurance**

Subtask 2.1: **TWRI, with assistance from BAEN and SFA, will develop a QAPP for activities in Tasks 3 and 4 consistent with EPA Requirements for Quality Assurance Project Plans (QA/R-5) and the TSSWCB Environmental Data Quality Management Plan.**
All monitoring procedures and methods prescribed in the QAPP shall be consistent with the guidelines detailed in method specific, peer reviewed or widely accepted documents or SOPs describing the specific methods used. These documents will be detailed in the project QAPP when developed.

The following actions have been completed during this reporting period:

A. This task is complete.

100% Complete

Subtask 2.2: TWRI will submit revisions and necessary amendments to the QAPP as needed.

The following actions have been completed during this reporting period:

A. No activity to report this period.

0% Complete

TASK 3: Poultry Farm Selection and Equipment Installation

Subtask 3.1: BAEN and SFA will coordinate with TSSWCB to identify and select a poultry operation as a cooperator.

The following actions have been completed during this reporting period:

A. This task is complete.

100% Complete

Subtask 3.2: BAEN and SFA will instrument the control and treatment houses with monitoring equipment. This includes air samplers; temperature, humidity, static pressures sensors; and a Fan Assessment Numeration System. Associated data loggers will also be installed.

The following actions have been completed during this reporting period:

A. BAEN and SFA successfully all necessary monitoring equipment within the control and treatment houses.

100% Complete

Subtask 3.3: BAEN and SFA will coordinate with the manufacturer/distributor of the EPI and BioCurtain systems to install both treatment systems in the treatment barn.

The following actions have been completed during this reporting period:

A. This task is complete.

100% Complete

Subtask 3.4: BAEN will track the costs associated with the procurement of the EPI and BioCutain systems, the delivery, installation as well as any retrofitting that is needed to make the
systems operational. This information will be compiled into a brief, yet all inclusive summary of costs that a producer could expect if this dust and odor mitigation system was purchased and installed.

The following actions have been completed during this reporting period:

A. BAEN prepared fixed and variable costs of operating the automated electrostatic particle ionization system and the BioCurtain™ and submitted it to TSSWCB for review on February 24, 2011. Additional content was requested, so the report will be submitted again upon insertion of additional content during the 5th quarter.

95% Complete

TASK 4: BMP and Monitoring Systems Verification

Subtask 4.1: BAEN and SFA will test the BioCurtain and EPI systems independently to ensure the proper operation of each system. Testing will occur during two independent one-day trials for each system; one in the summer and one in the winter.

The following actions have been completed during this reporting period:

A. On December 7, 2010, BAEN and SFA conducted a second and final winter time sampling campaign to test BioCurtain and EPI systems independently. Data on barn static pressure, ventilation fan on and off operation, particulate matter, ammonia, volatile organic compounds, hydrogen sulfide and weather including humidity and temperatures inside and outside of treatment and control barns were collected. These data are currently analyzed to assess the effect of the two treatment systems.

80% Complete

Subtask 4.2: BAEN and SFA will operate and evaluate the EPI and BioCurtain system concurrently to ensure the proper operation of this dual-technology system. Testing of this technology will occur over a three-day period and will be repeated once during the summer and once during the winter.

The following actions have been completed during this reporting period:

A. On December 7, BAEN and SFA set-up all the monitoring and measuring equipment and reinstalled a weather station at the poultry site. On December 8, 2010, BAEN and SFA conducted a second and final winter time sampling campaign to test BioCurtain and EPI systems concurrently. Data on barn static pressure, ventilation fan on and off operation particulate matter, ammonia, volatile organic compounds, hydrogen sulfide and weather including humidity and temperatures inside and outside of treatment and control barns were collected. These data are currently analyzed to assess the effect of the two treatment systems. In addition, on December 20, 2010, after the birds were removed, litter samples from both barns were collected to assess nitrogen levels in the two-flock old litter. These data are currently analyzed to assess the effect of the two treatment systems.

80% Complete
Subtask 4.3: BAEN and SFA will operate and maintain monitoring equipment in the control barn during all BMP tests to verify that adequate comparisons will be able to be made between treated and un-treated air during a long-term demonstration.

The following actions have been completed during this reporting period:

A. BAEN and SFA operated and maintained monitoring equipment in the treatment and control barn during all BMP tests in December, 2010 to verify that adequate comparisons will be able to be made between treated and un-treated ventilation air.

100% Complete

III. Related Issues/Current Problems and Favorable or Unusual Developments

TWRI will continue to resolve any issues with subcontractors and grant issuers concerning the budget timetable that developed during the last quarter.

IV. Projected Work for Next Quarter

- Submit the fifth quarterly progress report
- Participate in project coordination and update meetings
- Submit final draft of interim operating costs report to TSSWCB