

Determination of Emissions Data and Reduction of Particulates Contributing to Disease Spread from Poultry Production

Project Summary

A central idea of this **Integrated** project is that the optimal relationship between *engineered* environments for commercial poultry production and *natural* air resources supporting animal and human health is one that sustains the quality of that natural resource while maintaining or improving the health and productivity of our poultry industry. Therefore, a major CSREES goal this project addresses is to protect and enhance the Nation's natural resources. To achieve that goal, one key objective is *to advance* knowledge in the fundamental sciences of agriculture and housing systems to better characterize and understand the susceptibility/mediation of airborne particulate matter (PM) contributing to disease spread from poultry production. The second key objective is *to extend* that science-based knowledge to innovators in future poultry facility design and production management. The project builds on previous data findings by this multi-disciplinary team using computation fluid dynamic models of PM for within facility and edge-of-facility boundaries supporting the objective of determining best practices for proper ventilation and emissions control. Continuing that effort, enhanced goals for this resubmitted project are to *quantify* PM aerobiological transmission from poultry production practices; *measure* the susceptibility of these carrier particles to control through filtration capture and energetic or chemical deactivation; *model* airborne particulate emissions using improved design and production practices research findings; *engage* industry innovators involved in the design of future poultry facilities; and *propose* proper ventilation and emissions control strategies to align well-established building science design and best practices developed to protect and enhance our animal and human health.