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Improving Air Quality in Swine Barns: Results of Intervention Study

Primary Presenter: Renée Anthony, PhD, CIH, CSP, University of Iowa.
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Learning Objective: To understand methods available to improve the air quality of indoor livestock production buildings.

A multi-year study has examined engineering controls to reduce concentrations of hazardous wintertime contaminants in indoor swine farrowing buildings. Field interventions incorporated ventilation and equipment replacement in an educational swine farrowing room over two winters. A ventilation system, which included dust removal and recirculation, was installed. Respirable and inhalable dust concentrations were significantly reduced: the system with a pocket-filter performed better than an equivalently-sized cyclone. Room concentrations of hazardous gases (hydrogen sulfide, ammonia, carbon dioxide) were not increased as a result of increasing air movement in the room. Carbon dioxide concentrations exceeded the recommended 1540 ppm limit (mean = 2480 ppm) when common unvented heaters were in use, but replacing heaters to vent combustion gases outside of the building reduced in-room concentrations (mean = 1420 ppm). The heater was associated with 800 ppm reduction, while between-winter differences in

temperature and pig counts accounted for a 200 ppm reduction. Replacing heaters present a low-cost solution to reducing one of the three main air contaminants in this building. Testing the ventilation system in a production barn while tracking human and animal health improvements may be necessary to demonstrate the cost benefit of ventilation to producers.

A/V Needed: LCD Projector/laptop
Oral presentation, 30 minutes

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