

ENVIRONMENT

Title: Air Quality/Emission and Energy Usage Impacts of No Pit fans in a Wean to Finish Deep Pit Pig Facility. - **NPB #07-042**

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Scientific Abstract:

Ammonia (NH₃) and hydrogen sulfide (H₂S) Flux rates (FR) from both rooms of a 2800 head double-wide, deep-pitted, mechanically-ventilated, grow-finish barn were monitored continuously for approximately six months. A wean to finish barn was desired but a suitable cooperator with such a barn could not be located. The two rooms (north and south) were identical except that the south room (SR) pit fans were moved from manure pumpouts into the sidewall prior to monitoring. Additionally, there was some offset (≈ 2 weeks) in the filling and emptying of the pigs as noted in the data. Concentrations of NH₃, H₂S and carbon dioxide (CO₂) were measured at 6 locations per room every two hours using EPA approved instrumentation. Room pressure (PA) and temperature (°C) and humidity (%RH) were monitored continuously along with ambient (outside) temperature and humidity. Monitoring included both warm and cold weather, beginning in September of 2008 and will continue through March 2009. NH₃ and H₂S FR ($\mu\text{g/s/m}^2$) varied widely and are reported pre- and post-pumping of the manure pit. In general, moving the pit fan from the pit pump out to the sidewall reduced ammonia emissions from the barn by 20% and hydrogen sulfide by 80% without any real impacts on indoor air quality in the barn for the first group or turn of pigs.

Keywords: Aerial emission, ventilation, pig grow-finish barns

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