Ammonia, Hydrogen Sulfide, Odor, and PM_{10} Emissions from Deep-Bedded Hoop and Curtain-Sided Pig Finishing Barns in Minnesota

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The concentration and emission rate for ammonia (NH_3), hydrogen sulfide (H_2S), odor, and particulate matter under 10 microns in diameter (PM_{10}), were measured in a representative deep-bedded hoop pig finishing barn and a slatted-floor, curtain-sided pig finishing barn during 2+ week periods in the winter and summer in Minnesota. These same emission parameters were measured, during a separate experiment, simultaneously from a deep-bedded group-sow farrowing barn and a conventional slatted-floored, crated barn over four farrowing periods. NH_3 emissions were higher in the hoop finishing barn on a per pig basis than the curtain sided building while H_2S concentrations and emissions were lower in the hoop barn compared to the curtain barn during both the winter and most of the summer. NH_3 emission was higher from the deep-bedded farrowing room during the summer farrowing, but was otherwise similar to the deep-pit farrowing barn during other seasons. H_2S and odor emissions were highest from the conventional deep pit farrowing room compared to the deep-bedded farrowing. PM_{10} concentrations and per pig emissions were similar for both finishing barn types during the winter and summer but dust levels were slight higher for the slatted floor farrowing barn. Odor concentrations and emissions were generally lower in the hoop barn compared to the curtain barn.