

ENVIRONMENT

Title: Assessing the impact of swine sulfur intake from drinking water on odor and gaseous emissions and manure nutrients – **NPB #05-115**

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Abstract

The impact of a specific input to the pig on the resulting air emissions and manure characteristics was assessed. Specifically, the impact of varying sulfate levels in drinking water on odor and gaseous emissions and on swine manure properties was determined. Sulfur intake is of particular concern because 6 out of the 10 most odorous components of swine odor have been found to contain sulfur. Five replicates were completed in four separate grow-finish rooms, each containing 6 pens and about 10 pigs per pen and given drinking water ranging in total sulfate content from about 80 ppm (control) up to 1800 ppm sulfate. Each treatment was applied over an 8-week growth period, with an average initial pig weight of 40 kg. Thus, a total of 30 pens and 300 pigs per treatment were employed, providing a high level of statistical power. Results showed that high sulfate levels in water had no adverse impact on pig performance, on gas and odor emissions or on manure nutrient properties. However, when using high-sulfate drinking water, proper measures should be in place to consider the increased potential for generating high spikes in hydrogen sulfide levels during manure handling operations, such as pulling pit plugs. Overall, this study showed that water treatment is not necessary when using drinking water containing up to 1800 ppm sulfate from the perspective of pig health, pig performance, financial returns and environmental impact. This can pave the way for the use of water with sulfate levels exceeding the existing limit for livestock water, allowing the pork industry to expand into areas previously considered as having unacceptable or undesirable drinking water sources.

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