

# Water spraying to control hydrogen sulphide emissions from agitated manure

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Swine barn workers can be potentially at risk of exposure to hydrogen sulphide (H<sub>2</sub>S) gas when performing manure management tasks in the barn, such as pulling pit plugs to clear out manure pits. Practical and cost-effective preventative measures are needed to help ensure that H<sub>2</sub>S levels do not reach hazardous concentrations in swine barns and to protect the health and safety of both workers and swine.

A bench-scale experiment was conducted to see whether spraying water with or without an additive (a by-product from oilseed processing) could reduce the airborne H<sub>2</sub>S released from agitated manure. Swine manure collected from a grower-finisher room was stored undisturbed in sealed barrels (2/3-full) for two weeks. During testing, each barrel was agitated using a mixer (for 1 min), followed by application of liquid spray on the manure surface for 10 min. The liquid spray treatments tested were control (no spray), water only, water with 25% additive, and water with 65% additive. The H<sub>2</sub>S concentration in the air samples collected right after agitation and 1, 5 and 10 minutes after spraying had begun were analyzed using a gas chromatography-based reference analytical method.

Spraying water increased the H<sub>2</sub>S in the air initially, but resulted in a faster decrease of H<sub>2</sub>S over time compared to the control with no spray. The additive had the surprising effect of increasing the H<sub>2</sub>S concentration compared to the control. Water spraying has the best potential to reduce H<sub>2</sub>S release, and further work will concentrate on optimizing this technique.

## **Implications:**

Initial results show spraying water over the agitated manure surface can control the rate of release of H<sub>2</sub>S. Once fully investigated, incorporating this technology in swine barns can help prevent worker and animal exposure to high levels of H<sub>2</sub>S when emptying manure pits.