

Swine Odor Control A Tough Hog To Handle

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pits, outside storage structures, and insights into the university's own encounter with odor litigation on their college farm in Iowa.

One thing producers should keep in mind, noted Bundy, was that "no additive can apply to anything except in the pit," he said. "Not all odors are generated from the slurry basin." Odors can be generated from the slats in the houses, from the pigs, and from equipment.

In the case of studying pit additives, many companies paid for the research into their application — and some companies "tell us how to report" the information, Bundy noted. Product rate use varied.

In all, about 25-30 different products for below-ground manure pits were analyzed for their effectiveness in the studies.

About 3-4 years ago, a program to measure odors was put in place

to help study additives. A system of being able to measure odors was first needed. "If you cannot measure odors," Bundy said, "you can't compare management systems to deal with them."

"Olfactometry" is the technical method used to analyze odors. Two different types of odor measurements are used — a scentometer and a dilution olfactometer.

Both methods make best use of the only real reliable way to "measure" an odor — the human nose.

The scentometer can measure recognizable odors in parts, from 1.5 parts per million (ppm) to 350. An odor is recognized by a human subject at 7:1, noted Bundy, where one part is odorous and seven are nonodorous. In odor litigation, Connecticut and parts of Texas use the scentometer, which measures the odor at the property line. Missouri is considering use of the scentometer under the same



New directors of the Pork Board were elected. At far right is Brent Hershey, president of Lancaster Pork Producers. New directors are, from left, Scott Bailey, Ephrata; Nelson Beam, Elverson; and Kurtis Good, Denver.

Gary Licht, DEKALB Alfalfa Grower



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conditions.

For the most part, many odors aren't dangerous, in the quantities released into the air, from swine operations. They are merely nuisance odors that, with several steps, can be controlled.

The two main odors under scrutiny are ammonia and hydrogen sulfide. "If we reduce those two, we got it made," Bundy said.

The accepted maximum safe level of ammonia is 25 ppm; the odor is detected at 5 ppm. For hydrogen sulfide, maximum safe level is 10 ppm; the odor is detected from 50-100 parts per billion (ppb). Bundy noted that, agitating pit manure can readily raise the hydrogen sulfide gases to dangerous levels, at 1,000 ppm. The deadly gas can kill livestock and humans.

Measuring odor threshold using the dilution olfactometer simply makes use of two separate volumes — one of odorous air, with the gas, and the other with fresh, nonodorous air. Germany uses this method to determine odor thresholds. Some cities, including Houston and Sioux City, are using this method to measure odor.

In a European study, scientists discovered that 22 percent of the odors were produced from swine buildings, 17 percent from slurry storage, and 52 percent from spreading manure. In studies undertaken by Iowa State University, different methods of containing storage and application odor tests were undertaken.

Included in the Iowa study, biocovers (including corn stalks and wheat straw, in addition to using bubbles to form a crusty mass cover) were used. Also, manufactured rock was utilized to

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