

ANIMAL WELFARE

Title: Evaluation of Sodium Nitrite for mass euthanasia of commercial pigs –
NPB #20-118

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Scientific Abstract:

It is critical to develop feasible mass euthanasia technology that is humane, economical, safe, and less labor intensive. Microencapsulated sodium nitrite (meSN) feral swine bait has been developed and marketed by Animal Control Technologies Australia (ACTA) as a feed-based toxicant for feral swine control. This technology has not been applied to commercial swine in confinement barns, just feral swine.

110 early nursery weight pigs (6.2 kg average weight) were randomly allotted to one of the 11 treatments. Granular form SN (un-encapsulated) salt and microencapsulated SN were included at a dosage of SN targeted at 20 grams of SN/100kg of pig at 2 lbs offered per pig. The resulting concentration was 2.2% SN per kg of feed. Three different feed flavors or taste suppressor combinations were utilized including dried molasses at 4.4% inclusion, vanilla at 0.1% inclusion, and a bitterness taste suppressor at 0.2% inclusion. The dosage of SN in the water was targeted for an intake of 20g of SN per pig with an intake estimation of 0.25 gallons per pig.

Of the feed treatment groups, 53 of 80 pigs (66%) were euthanized by SN. Each feed treatment resulted in a range of 50-80% mortality regardless of treatment. 63% of the pigs vomited during the feed treatment. The average time to death was 2 hours and 12 minutes. The earliest pig died at 1 hour and 13 minutes and latest pig at 3 hours. Average feed consumption was 0.14 kg/pig. Pigs on averaged consumed 0.49 g of SN per kg of body weight with a range of 0.20 to 1.09 g of SN per kg.

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All feed formulations performed similarly, with only a 30% mortality rate range between treatments. The flavorings and taste blockers did not improve intake and mortality in comparison to feed with meSN and SN by itself. Pigs were averse to consuming water with SN solubilized.

Sodium nitrite is a viable option for mass depopulation in constrained circumstances. It euthanized between 50-80% of the pigs when offered to commercial swine in this study. Further development is needed to increase the euthanasia rate of pigs, speed up time to death, and decrease the percentage of pigs that vomit.