



Re: Draft AHC policy on the use of microencapsulated sodium nitrite for the destruction of domestic pigs in an emergency animal disease response.

Response from the
Australian Veterinary Association Ltd
31 January 2024

To the Animal Health Committee

C/- Dr Michelle Rodan, Chair

By email

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Re: Draft policy on the use of microencapsulated sodium nitrite for the destruction of domestic pigs in an emergency animal disease response.

Thank you for the opportunity for AVA to provide comment on the abovementioned draft policy.

We note that there is scant literature on use of sodium nitrite in domestic pigs, and the policy would be improved by inclusion of relevant references.

From the information available on its use in **feral** pigs, it seems that sodium nitrite is relatively humane compared to other methods (such as 1080), though does result in moderate suffering, and the time to death may be from 1-3 hours after ingestion of a lethal dose according to the HOGGONE product information. According to the model developed by Sharp and Saunders (2011), it ranks second to a free head shot by way of relative humaneness for the purposes of killing feral pigs (Sharp and Saunders, 2011).

The AVA is aware of only limited research in the USA trialling use of sodium nitrite in **domestic** pigs, administered via drinking water or as an oral drench; the oral drench being more effective in ensuring pigs consumed a lethal dose, and achieving death within 35-83 minutes (Lower et al, 2020; Pepin, 2020).

We believe that trials have occurred in Australia funded by Australian Pork Limited (APL) using a dose rate of 800mg/kg which demonstrated 100% lethal outcomes in 4 pens of 6 pigs. This work is not yet published – and in order to understand the animal welfare implications, we need to know what clinical signs of toxicity were displayed, and the range and average recorded time to death of treated pigs (particularly from onset of clinical signs).

Further research (and publication) is needed to determine how sodium nitrite may provide a suitable emergency killing method. More research will also help to address issues such as stability, palatability, and concerns around whether target animals can receive the required bolus dose to be effective.

Other options for mass destruction include penetrating captive bolt, firearms and CO2 gassing, and all of these achieve a shorter time to death than sodium nitrite. We suggest, until further data is available to indicate otherwise, the AHC policy should emphasize sodium nitrite is an option only in the circumstances where no other more humane methods are available. This can be updated if further research becomes available demonstrating effectiveness and relative humaneness of sodium nitrite use in domestic pigs.



Aside from the particulars of this policy, we also encourage the AHC and APL to investigate other humane options, such as inert gas alternatives. For example, high expansion (dry) nitrogen foam is a humane alternative currently being utilised in Europe for mass destruction of pigs and poultry in containers. There are now also commercial systems that can generate N₂ filled foam at a rate sufficient to enable whole-shed gassing (Hewitt & Small, 2023). Whilst not yet available in Australia, this method shows promise, and its consideration is encouraged.

Specific comments on the current draft policy:

- Regarding policy section (ii), we note that any feed withholding period must not exceed 24 hours. While feed withholding is not ideal from a welfare perspective, we accept that withholding feed for a period not exceeding 24 hours for healthy pigs may be necessary in order to ensure they consume lethal doses. Certain classes of pigs will be more vulnerable to feed withdrawal, and so AVA recommends the policy should identify these, and require that any feeding of pigs below maintenance requirements must only be done under the direction and supervision of a pig veterinarian and nutritionist.
- Re policy section (iii), it is recommended that this statement be clarified and that “short periods” be defined – for instance, it is not clear if the reference to feeding below maintenance requirements for short periods is in addition to the 24 hours feed withholding, and what this restricted feeding might entail? Any period of feeding below maintenance should not be in addition to 24 hours feed withholding, to prevent extended periods of hunger.
- Re policy section (vii), we understand that the recommended dose rate of 800mg/kg is derived from the APL study mentioned above; it would be helpful if the policy could provide either a published reference for this work, or a link to the data generated, including clinical signs of toxicity and time to death achieved at this dose rate. The AVA would appreciate an opportunity for further comment on the policy once more information is able to be provided.
- Re policy section (viii), the policy currently requires that animals which recover or fail to succumb to the toxin, must be killed by another method within 2 hours. This is supported provided those animals are not otherwise showing signs of distress. However there needs to be a further statement added to the policy, requiring rapid euthanasia of any animal which may show unexpected signs of pain, distress, or illness following consumption of the toxin; this should occur at the time it is observed.
- AVA recommends that the policy include a requirement for appropriately-experienced pig veterinarians to be present at the site to enable rapid decision-making around when to intervene and apply an alternative humane killing method.



References

Hewitt L, Small A. An independent animal welfare assessment of mass destruction methods for pigs on-farm that will be used to inform national standards and guidelines. November 8, 2023

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Sharp, Trudy & Saunders, Glen. (2011). A model for assessing the relative humaneness of pest animal control methods:

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