



Frequently asked questions about HOG-GONE®

What is 'HOG-GONE®' and how does it work? HOG-GONE® is a next-generation feral pig bait, designed for broad-scale control and management of feral pigs. Fast-acting and highly toxic to pigs, the active compound in HOG-GONE® is sodium nitrite – a common human food preservative – which acts by blocking oxygen-binding pathways in the pig¹. This mode of action is far more humane than existing baiting systems and sodium nitrite toxicity is potentially reversible. An antidote, methylene blue, is currently being investigated².

Is sodium nitrite really more humane than existing feral pig baits? Yes. According to independent testing (www.imvs.sa.gov.au/), sodium nitrite satisfies the general criteria for a humane poison – it is rapid and the symptoms leading to death are generally unremarkable³. Sodium nitrite works very quickly in the pig, resulting in unconsciousness and death within about two hours. This is a much shorter timeframe than other toxins currently or previously used for feral pig control in Australia such as warfarin (1-2 weeks), phosphorus (yellow phosphorus or CSSP; 2-4 days) and sodium fluoroacetate (1080; 6-8 hours). Sodium nitrite does not cause severe clinical disease with high levels of distress. The mode of action is similar to carbon monoxide poisoning, with sodium nitrite intoxication leading to a state of unconsciousness before death.

“ Evidence suggests that death from nitrite intoxication is an acceptable method of humane killing for large scale feral animal culling. IMVS, 2010. ”

Isn't nitrite a strictly controlled substance? No, sodium nitrite is already used in the food industry as a common meat preservative. Sodium nitrite should not be confused with sodium nitrate, which is far less toxic and not

practical for feral pig control. A patent has been granted on the use of sodium nitrite as a vertebrate pesticide, so only IA CRC/ACTA licensees can manufacture nitrite-based vertebrate pest products.



Can I use standard meat preserving nitrite for feral pig control? No. Standard meat preserving nitrite should be avoided as it is unlikely to kill and would probably compromise future pig baiting programs in the area. Although meat preservatives and curing agents contain sodium nitrite, the percentage of nitrite is too low to be toxic to feral pigs. Some preservative mixtures contain less than 1% sodium nitrite, with the rest made up of regular salt⁴. Feral pigs find salt unpleasant and can develop a strong aversion to baits that have a salty taste. The sodium nitrite in HOG-GONE® baits is microencapsulated to avoid issues such as bait aversion, and to maximise stability and gut delivery to the pig.

What about availability and operator safety of HOG-GONE® baits? The classification level of HOG-GONE® baits will be lower than currently available pig toxins, which means reduced hazard for operators and greater availability in most states and territories. HOG-GONE® baits are likely to be classified Schedule 6 (S6) under the Standard for the Uniform Scheduling of Medicines and Poisons⁵ (SUSMP, www.tga.gov.au/ndpsc/) and the Agricultural and Veterinary Chemicals Code Regulations. S6 chemicals are available to the public, but containers must include the heading, 'Poison'. Due to their moderately hazardous nature, direct contact with S6 chemicals should be avoided. It is recommended that HOG-GONE® baits be handled with tongs, which also provides the added benefit of reducing human scent on the bait.

Can I eat the meat from pigs that have been poisoned by HOG-GONE® baits? Yes. There is no possibility that a human or any other animal could receive a lethal nitrite dose from eating muscle tissue from HOG-GONE® poisoned feral pigs. You are more likely to find higher levels of nitrite in your average vegetables (57 mg/kg) and cured meats (100 mg/kg) than in the muscle of nitrite-poisoned feral pigs (2-6 mg/kg)^{6,7}. However, consumption of undigested stomach contents should be avoided as they may contain intact bait material.

Someone said that sodium nitrite causes cancer. Is this true? There is no evidence of a cancer risk from the sodium nitrite used in feral pig baits⁸. Authorities in toxicology and food safety have deemed nitrites safe to eat when used appropriately. Public health benefits of nitrite use far outweigh potential risks, with the addition of nitrites to certain foods essential for the prevention of spoilage and food-borne disease such as botulism. In recent years health experts have questioned claims about nitrite links to cancer, especially as new studies point to possible benefits of nitrite consumption to cardiovascular health and blood pressure^{9,10}.

Has HOG-GONE® been thoroughly tested? Yes. HOG-GONE® baits have been extensively tested both in the laboratory and controlled pen trials for stability, palatability, persistence of the toxin in the carcass/environment, efficacy and humaneness. Current field testing for national registration of HOG-GONE® is nearly finished, and the baits have proven highly effective against feral pigs across a range of rural settings in Australia. Testing of non-toxic versions of the bait is also well underway in the United States.

Are other animals at risk from HOG-GONE® baits? What about my dog? Livestock and native species are not usually attracted to HOG-GONE® baits. However, individual animals may sample a bait, so it is recommended that non-target animals be excluded from baiting points by fencing or use of a HogHopper™. The HogHopper™ — a bait delivery device that targets feral pigs (pictured right) — has been developed with the management of populations of feral pigs in mind. The HogHopper™ design increases the selectivity, efficiency and safety of feral pig baiting. In areas where farm dogs have access to bait points, a HogHopper™ should be used.

How long does it take for HOG-GONE® baits to break down? HOG-GONE® baits are designed to break down over time with the action of moulds and bacteria in the soil. Breakdown varies with temperature and soil moisture from about a week in wet tropical conditions, to two months in dry areas. While it is not essential to retrieve HOG-GONE® baits from baiting sites, it is good practice to remove any excess bait at the end of a program.

How does HOG-GONE® fit with other pig control techniques? Toxic baiting is a broad-scale management tool and the most cost-effective means of controlling feral pigs in Australia. On their own, HOG-GONE® baits (with HogHopper™) have consistently reduced feral pig activity by 70-90% in field studies. Research indicates that using different control methods in a coordinated way is the best approach to remove pest animals and prevent damage. Landholders are likely to see long-term benefits from an integrated approach to feral pig management that combines HOG-GONE® baiting with other techniques such as shooting and trapping.



Where can I get more information?

- Feral.org.au : <http://www.feral.org.au>
- Animal Control Technologies: <http://www.animalcontrol.com.au>
- Assoc. Prof. Steven Lapidge, Program leader, IA CRC: steven.lapidge@invasiveanimals.com

References

1. Cowled et al. (2008). Additional toxins for feral pig control: identifying & testing Achilles heels. *Wildlife Research* 35:651-662
2. Invasive Animals CRC *Research Portfolio Summary 2010*. Invasive Animals Cooperative Research Centre, Canberra.
3. Institute of Medical and Veterinary Science (IMVS, 2010) *Assessing the humaneness and efficacy of a new feral pig bait in domestic pigs*.
4. Siu & Henshall (1998). Ion chromatographic determination of nitrate & nitrite in meat products. *Journal of Chromatography A*. 804:157-160.
5. Therapeutic Goods Administration (2010). Department of Health and Aging. Australian Government. *The Poisons Standard*.
6. Hord et al (2009). Food sources of nitrates and nitrites. *American Journal of Clinical Nutrition*. 90(1):1-10.
7. Correia et al (2010). Contribution of different vegetable types to exogenous nitrate & nitrite exposure. *Food Chemistry* 120(4):960-966.
8. National Toxicological Program (2001). *Technical Report on the Toxicology and Carcinogenesis Studies of Sodium Nitrite in Rats and Mice*. US Dept of Health & Human Services.
9. American Meat Institute (2008). *Sodium Nitrite: The Facts*.
10. Food Safety Australia (2010). *Nitrites - Good or Bad?*