Wild dog control method – Strychnine

Strychnine poison
Strychnine is used for the control of wild dogs and foxes. It is a natural substance extracted from the seeds of a tree of the *Strychnos* genus (*Strychnos nux-vomica* and *Strychnos ignatii*). It is naturally occurring in three Queensland species (*Strychnos lucida*, *Strychnos psilosperma* and *Strychnos minor*).

How to access Strychnine
Queensland Health can issue landowners with a permit to obtain, possess and use strychnine for the control of vertebrate pests. This can only be used on their property. Landowners can obtain strychnine in a 25 g pack size of powder or crystals. The permit will have strict conditions which must be followed.

How toxic is the substance?
Dogs are moderately susceptible to strychnine. Table 1 contains a comparison of the susceptibility of different animals to strychnine.

<table>
<thead>
<tr>
<th>Animal</th>
<th>mg/kg bodyweight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rabbit</td>
<td>0.6</td>
</tr>
<tr>
<td>Dog</td>
<td>1</td>
</tr>
<tr>
<td>Rat</td>
<td>5</td>
</tr>
<tr>
<td>Pigeon</td>
<td>21</td>
</tr>
<tr>
<td>Possum</td>
<td>30</td>
</tr>
<tr>
<td>Human</td>
<td>1-30</td>
</tr>
</tbody>
</table>

Note: LD₅₀ values represent the lethal dose for 50 % of a population.

How does it work?
Strychnine works by preventing muscles that have contracted from relaxing. Death is caused by asphyxiation due to respiratory muscles remaining contracted and therefore unable to perform their normal breathing function.

How can risks be minimised?
Risk is a combination of two factors: hazard and exposure. The hazard in this case is the toxin (and how sensitive the animal is to the toxin). The key element is to maximize exposure to the animal you wish to target, i.e. wild dogs, and minimize exposure to the non-target animals.

To minimize the impact on non-target species, bait materials are impregnated with concentrations of strychnine specific to the target species. The concentration used depends on:
- The lethal dose rate required;
- Body weight;
- Amount of bait likely to be consumed.

Typically 30 to 60 mg is all that is required to kill a wild dog.

The potential danger to non-target species is further minimized by:
- Using a specific bait type;
- Free feeding;
- Estimating likely bait consumption and using only that quantity of bait;
- Placing bait appropriately (including burying or otherwise concealing it);
- Bait tying;
- Stipulating a minimum bait size;
- Using an appropriate strength of strychnine.
What are the advantages of strychnine?
An advantage of strychnine is having another chemical tool for wild dog control for the times when sodium fluoroacetate 1080 (the preferred option) is determined to be not suitable for use.

What are the disadvantages of strychnine?
The greatest single disadvantage of using strychnine over sodium fluoroacetate 1080 is that strychnine is not as target selective. As well, there is no known antidote for strychnine poisoning. The onset of symptoms of strychnine poisoning can be delayed anywhere from 10 minutes to 10 hours depending on the species and the individual animal. This delay is due to the time it takes for the strychnine to be absorbed. The best protection for working dogs is the use of muzzles and tying up when not working.

What is the fate of the substance in the environment?
The length of time that strychnine meat baits remain active under field conditions depends on the breakdown rate of the bait matrix and the weather conditions. Where the strychnine does come in contact with the soil, it is immobilised by the clay component of the soil.

Is it possible to recognise poisoned animals?
Key symptoms commonly used to assign strychnine poisoning as the cause of death in a dog is agitation and vocalisation (yelping/barking), which is followed by tenseness, and stiffening of the body and death. Time to death from the first sign of symptoms could be up to 2 hours.