Control method: Fumigation of rabbit warrens with chloropicrin

Assumptions:	▪ This is not considered an acceptable method therefore there is no standard operating procedure.

PART A: assessment of overall welfare impact

DOMAIN 1 Water or food restriction, malnutrition				
No impact	Mild impact	Moderate impact	Severe impact	Extreme impact

DOMAIN 2 Environmental challenge				
No impact	Mild impact	Moderate impact	Severe impact	Extreme impact

DOMAIN 3 Disease, injury, functional impairment				
No impact	Mild impact	Moderate impact	Severe impact	Extreme impact

DOMAIN 4 Behavioural or interactive restriction				
No impact	**Mild impact**	Moderate impact	Severe impact	Extreme impact

DOMAIN 5 Anxiety, fear, pain, distress, thirst, hunger				
No impact	**Mild impact**	Moderate impact	Severe impact	Extreme impact

Overall impact
Mild

DURATION OF IMPACT				
Immediate to seconds	**Minutes**	Hours	Days	Weeks

SCORE FOR PART A:	**3**

Summary of evidence:

Domain 1	No impact in this domain.
Domain 2	No impact in this domain.
Domain 3	No impact in this domain.
Domain 4	Prior to fumigation, rabbits are driven underground into the warren by making loud noises (e.g. riding motorbikes) and using dogs[1]. These disturbances are likely to cause 'flight or fight' stress responses that are similar to those activated when prey flee from predators. These endocrine responses are short lived and stress hormone levels quickly return to normal[2]. Rabbits react to fumigation by confining themselves to parts of the warren farthest from entrances, attempting to dig out of the warren at a blocked entrance, making a new exit where a burrow passes close to the surface or moving around the warren system in a disturbed state[3].
Domain 5	Within a few minutes of encounter with the gas, rabbits appear to be immediately irritated (rapid blinking and nose twitching) and display periodic bursts of flight[4]. This is followed by immobilisation in a hunched posture and distress vocalisation[4], which can be indicative of pain[5].

PART B: assessment of mode of death

Time to insensibility (minus any lag time)				
Very rapid	Minutes	Hours	Days	Weeks
Level of suffering (after application of the method that causes death but before insensibility)				
No suffering	Mild suffering	Moderate suffering	Severe suffering	Extreme suffering

SCORE FOR PART B:	**F**

Summary of evidence:

Duration –	Time to death (TTD) is 70-95 minutes when power fumigation is used (peak chloropicrin concentration 11.7-97.7 ppm)[4]. There can be wide variation in time to death that is related to exposure (e.g. from diffusion fumigation LD_{50} 14-71 ppm, TTD 15-135 minutes; LD_{50} 744 ppm, TTD 5 minutes; LD_{50} 1086 ppm, TTD 15 minutes)[6]. Exposure to chloropicrin that is not acutely lethal may cause a protracted death over hours of days[7].

Suffering –	Toxicosis includes severe upper respiratory tract irritation. Initial signs of toxicosis include rapid blinking, nose twitching, distress vocalisations and laboured breathing[7]. Signs prior to collapse include profuse lacrimal (eye and tear duct) and nasal discharge, congested breathing and uncoordinated paddling[7]. Signs before death are variable with some rabbits remaining hunched and immobile for up to an hour before death[4]. Human cases of chloropicrin poisoning include symptoms such as eye and upper respiratory tract infection, lacrimation, stomach upset, vomiting, nausea, coughing and headache[8]. After exposure to a sublethal dose some symptoms may persist for up to 11 days[9]. Rabbits that escape from warrens after fumigation may die up to a week after acute sublethal exposure[6].

Summary

CONTROL METHOD:	**Fumigation of rabbit warrens with chloropicrin**
OVERALL HUMANENESS SCORE:	**3F**

Comments

Lethal toxicosis from chloropicrin fumigation causes death by pulmonary oedema, bronchopneumonia or bronchiolitis obliterans[10].

Pain may be expressed as a change from normal behaviours. Clinical signs associated with pain include hunched posture and remaining immobile[5].

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