

The use of petrol engine exhaust fumes for the euthanasia of trapped birds

The trapping of large numbers of pest birds such as the Indian Myna has resulted in a growing demand for humane and cost-effective methods of euthanasia. The use of petrol engine exhaust fumes for the gassing of trapped birds has received most support because of its ease of application and availability. A recent study by Tidemann and King,¹ supports this approach. In October 2005, NSW DPI published a series of Codes of Practice and Standard Operating Procedures² for the humane control of pest animals. One of these documents (Methods of Euthanasia GEN 001) did not support the use of car exhaust fumes as per the following statement:

“Exhaust from idling internal combustion engines is NOT an acceptable euthanasia agent as adequate CO concentrations cannot be achieved (particularly with modern car engines) and exhaust contaminants such as hydrocarbons, ozone, nitrogen dioxide and nitric oxides cause severe irritation before death. Exhaust gases may also be unacceptably hot.”

In light of the Tidemann and King paper, there has been a call for this document to be amended and for inclusion of exhaust fumes from all types of petrol engines as an acceptable method of euthanasia. There are a number of practical reasons why this call would be worthy of support. However, there are also some points of issue that still remain before this could occur for all types of petrol engines.

The humaneness and efficacy of carbon monoxide (CO) as a gaseous euthanasia agent is highly dependent on the source of which four are readily available:

- i) Carbon monoxide from a **commercially compressed cylinder** is acceptable because it induces loss of consciousness without pain or discernable discomfort and death occurs rapidly if the right concentration is achieved. However, CO cylinders would not be readily available for such use due to OH&S issues.
- ii) Carbon monoxide sourced from the **cooled exhaust of non-vehicular petrol engines without a catalytic converter** (e.g. lawn mower or whipper snipper engine or purpose-built CO generator) appears to be acceptable since the level of carbon monoxide remains high and results in a rapid death. However, the literature suggests that contaminants such as hydrocarbons in the fumes can be irritating to the eyes and airways which makes the efficiency of delivery important.
- iii) Carbon monoxide sourced from the **cooled exhaust of vehicular petrol engines with a catalytic converter** i.e. from cars less than approximately 10 years old is not acceptable on the basis of all current information. For example, research has shown that the levels of carbon monoxide drop off very quickly after

¹ Tidemann, C. R. and D. H. King (2009). "Practicality and humaneness of euthanasia of pest birds with compressed carbon dioxide (CO₂) and carbon monoxide (CO) from petrol engine exhaust." *Wildlife Research* **36**: 522-527.

² Sharp, T., and Saunders, G. (2005). 'Humane pest animal control: codes of practice and standard operating procedures.' (New South Wales Department of Primary Industries: Orange)

the engine has started, leaving only a small window where concentration is adequate for a rapid death (*i.e.* for up to approx 60 seconds after a car has been cold started). It is also likely that the level of potential irritants *e.g.* carbon, are highest during this short time.

iv) Carbon monoxide sourced from the ***cooled exhaust of older vehicles without catalytic converters*** may be acceptable but would still have welfare concerns due to a high variability in the age and condition of engines and presence of contaminants.

To summarise, it appears that GEN 001 could be now be modified to include the use of CO sourced from non-vehicular cooled petrol engines without catalytic converters *i.e.* point ii) above. Some standard recommendations on filtering and cooling equipment, methods of introduction of fumes and operator competency would need to be devised. However there are remaining welfare concerns in relation to car exhausts (with and without catalytic converters) which remain unresolved and prevent their inclusion at this stage.

Standard Operating Procedures such as GEN 001 are nationally endorsed documents and before publication are required to be available for scrutiny by a wide range of stakeholders. NSW Industry and Investment cannot make a unilateral decision to change these documents without the same process being repeated. It is not the purpose of this Research Unit to hinder the implementation of humane pest animal control techniques. However, it is our responsibility to provide balanced, evidence based support which is used to develop peer reviewed and nationally adopted documents. This has been the process behind the publication of over 50 SOPs and 9 COPs to date and the reason why they have been accepted by animal welfare groups in particular.

We will therefore propose to the National Vertebrate Pest Committee that GEN 001 be modified as above and to agree to consider any further evidence to support the use of car exhaust fumes (with and without catalytic converters). To assist with the latter, we can provide documentation (additional to the Tidemann and King paper) to expand on the reasons for our recommendations above.

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