Carbon Monoxide Euthanasia of Shelter Animals

The Association of Shelter Veterinarians believes that the use of carbon monoxide for individual or mass companion animal euthanasia in shelters is unacceptable due to significant humane, operational and safety concerns. According to the most recent AVMA euthanasia guidelines issued in 2007, "euthanasia techniques should result in rapid loss of consciousness followed by cardiac or respiratory arrest and the ultimate loss of brain function. In addition the technique should minimize distress and anxiety experienced by the animal prior to loss of consciousness".[1] While the AVMA euthanasia guidelines do not consider carbon monoxide an unacceptable method of euthanasia, evidence suggests that this method fails to meet these two basic humane standards for euthanasia. The ASV believes, for the following reasons, that carbon monoxide euthanasia should be banned in shelters.

- Any gas that is inhaled must reach a certain concentration in the lungs before it becomes effective. [1] Placing multiple animals in a chamber may not only frighten and distress them, it can dilute the effective concentration of carbon monoxide that each animal receives, creating a haphazard euthanasia experience that can be prolonged.

- The rapid gas flow rates necessary to achieve the recommended carbon monoxide concentration of 6% can result in noise levels that frighten animals. Slowing the flow rates to lessen the noise levels will cause a delay in reaching the effective concentration of gas, thereby increasing the time necessary to achieve loss of consciousness.

- Agents inducing convulsions prior to loss of consciousness are unacceptable for euthanasia.[1] Yet, carbon monoxide stimulates motor centers in the brain, and loss of consciousness may be accompanied by convulsions and muscular spasms.[1] It has not been clearly established that these convulsions occur only following loss of consciousness.

- At a 6% carbon monoxide concentration, the average time to loss of consciousness has not been precisely determined, nor is it known if the vocalization and agitation some dogs exhibit are signs of distress.[2]
- Failure to maintain the chamber properly can result in dangerous gas leaks which are known to be hazardous to other animals and to personnel. Minor gas leaks can cause inconsistent gas concentrations during operation which can cause extreme animal distress and suffering prior to death.
- Carbon monoxide is unacceptable as a method of euthanasia for many categories and types of animals including animals under 16 weeks of age; animals with decreased respiratory functions; animals who are old, sick, or injured; and animals who are pregnant. These and other conditions can result in delayed absorption and/or circulation of the gas prolonging the time it takes to cause loss of consciousness and death. Many shelters are unlikely to know an animal's age and health status, making inhumane euthanasias very likely to occur.

- Carbon monoxide is odorless, tasteless, and highly toxic, making it extremely hazardous to human health. It also has the potential to cause an explosion at high concentrations. The death of at least one shelter worker in 2001 using carbon monoxide has been well documented and publicized.[4, 5] Chronic exposure to low levels of carbon monoxide can also cause serious human health problems.
- Use of carbon monoxide cannot be justified as a means to save money, increase safety, or distance staff emotionally from the euthanasia process. Studies have shown that carbon monoxide is actually more expensive than euthanasia by injection.[3, 5] Placing dangerous animals in the chamber still requires that animals be handled safely and humanely. Carbon monoxide euthanasia takes longer than euthanasia by injection and has not been shown to provide emotional benefits for staff.

Therefore, the Association of Shelter Veterinarians' position is that carbon monoxide should not be used for individual or mass companion animal euthanasia. Shelters currently utilizing carbon monoxide should research state laws permitting access to euthanasia drugs and switch to euthanasia by injection of Sodium Pentobarbital as soon as training, drugs, and equipment can be acquired.

[1] American Veterinary Medical Association (AVMA). AVMA Guidelines on Euthanasia 2007. Available at: http://www.avma.org/resources/euthanasia.pdf

[2] Chalifoux A, Dallaire A. Physiologic and behavioral evaluation of CO euthanasia of adult dogs. *Am J Vet Res* 1983; 44: 2412–2417.

[3] Fakkema D. Euthanasia By Injection Training Guide, American Humane 2009

[4] Gilbert, Kathy 2000 " Humane Society Cited in Death of Employee" The Times & Free Press, Chattanooga, TN, July 25, 2000 Available at: http://www.virginiavotersforanimalwelfare.com/TennesseeCOdeath7-00.htm

[5] Rhoades R. *Euthanasia Training Manual* by Humane Society of the United States 2002, published by Humane Society Press