

## Scientific research and findings cited on the use of carbon monoxide:

PETA	HSUS	Doug Fakema
<p>PETA claims-- Facts on Carbon Monoxide Poisoning * The American Veterinary Medical Association (AVMA) and the Humane Society of the United States (HSUS) agree that gas chambers should not be overcrowded. In fact, according to the <i>2000 Report by the AVMA Panel on Euthanasia</i>-the veterinary medical authority on euthanasia-"the CO chamber must be of the highest-quality construction and should allow for separation of individual animals."</p> <p>* Another condition of the AVMA panel on carbon monoxide killing is that "the chamber must be well-lit and have view ports that allow personnel direct observation of animals." The Yadkin County box is a dark, windowless contraption.</p> <p>* Carbon monoxide is hazardous to personnel because of its toxicity and the difficulty in detecting it. In March 2000, a technician in Chattanooga, Tennessee, died from accidental inhalation of carbon monoxide gas while he was killing animals. This tragedy prompted legislation to ban gas chambers in Tennessee.</p> <p>* According to the Humane Society of the United States, "Carbon monoxide is a hazardous substance</p>	<p><b>Appropriate Use of Carbon Monoxide for Animal Euthanasia</b></p> <p>The Humane Society of the United States (HSUS) recommends the injection of sodium pentobarbital, prepared specifically for use as a euthanasia product, as the preferred agent for the euthanasia of dogs and cats. This method, when properly performed, has been found to be the most humane, safest, least stressful, and most professional choice by The HSUS, the American Veterinary Medical Association, the American Society for the Prevention of Cruelty to Animals, American Humane Association, and the National Animal Control Association. However, not every animal care and control agency has access to sodium pentobarbital and the majority of these agencies use carbon monoxide as an alternative to euthanize animals.</p> <p>For those states where shelters cannot legally obtain, use, and administer sodium pentobarbital, The HSUS considers the use of CO a <b>conditionally</b> acceptable method of euthanasia for some animals when delivered by a commercially manufactured and properly equipped chamber. However, the many limitations of CO make the method less practical, considerably slower, and more expensive than lethal injection.</p> <p>It is always unacceptable to use CO for the</p>	<p><b>Comparison of Sodium Pentobarbital and Carbon Monoxide as euthanasia agents</b> By Doug Fakkema</p> <p>The position on euthanasia methods taken by most mainstream national animal care and control agencies is linked with the most recent AVMA special panel report on euthanasia. The American Veterinary Medical Association (AVMA) has been producing these reports once or twice a decade since 1963. The most recent report, entitled 2000 Report of the AVMA Panel on Euthanasia was published March 1, 2001. There is no legal or ethical requirement to follow AVMA's Panel recommendations on euthanasia. Their recommendations do not carry the weight of law or regulation (except in approximately five states that require euthanasia methods that conform to AVMA's recommendations).</p> <p>The American Humane Association (AHA) has recently adopted a position that EBI (euthanasia by injection) is the only acceptable method for animal shelter euthanasia of dogs and cats. AHA no longer approves the use of CO for shelter euthanasia of dogs and cats.</p> <p><b>Sodium Pentobarbital</b></p> <p>AVMA considers both sodium pentobarbital and CO as acceptable animal shelter euthanasia methods for dogs and cats. Of the two methods, euthanasia by injection with sodium pentobarbital</p>

<p>considered especially dangerous because it is odorless, tasteless, colorless, and explosive. Repeated exposure to CO, even at low levels, can result in many serious long-term effects including (but not limited to) cancer, infertility, and heart disease."</p> <p>* Old, young, and sick animals are particularly susceptible to gas-related trauma, as they breathe and circulate oxygen and carbon monoxide differently from healthy adult animals, causing a resistance to hypoxia (oxygen deficiency). For these animals, death by carbon monoxide poisoning is slow and highly stressful and therefore unacceptable.</p> <p>* The American Humane Association's (AHA) Operational Guide for Animal Care and Control Agencies and HSUS state that gassing takes at least 30 minutes, not counting the time it takes to eliminate the gas in the chamber, remove the animals, check each for vital signs, dispose of the bodies, and clean the machine before the next usage. The AHA operational guide states that it only takes two to three minutes for an animal to die via intravenous injection.</p> <p>* Lethal injection is cheaper! A study conducted by the Western Pennsylvania Humane Society in September 2000 concluded that for a jurisdiction euthanizing 10,000 animals per year, the yearly cost of</p>	<p>euthanasia of dogs and cats who are:</p> <ol style="list-style-type: none"> <li>1. Geriatric;</li> <li>2. Under the age of four months;</li> <li>3. Sick or injured;</li> <li>4. (Obviously) pregnant.</li> </ol> <p>Old, sick, or injured animals may have poor blood pressure or weak hearts, which may delay the effects of CO, causing them to experience distress prior to unconsciousness. Animals under the age of four months may not have the lung capacity to inhale enough CO to be effective. In pregnant animals, it is likely the mother will die from exposure to CO before the unborn puppies/kittens. Consequently, it is possible the puppies/kittens may die as a result of the mother's death (by suffocating to death) rather than from exposure to CO. The HSUS condemns using CO for animals meeting the above criteria.</p> <p>Because of these limitations, there must always be an acceptable backup method available, namely sodium pentobarbital. In most cases, agencies without access to sodium pentobarbital will need to contract with a local veterinarian to have sodium pentobarbital administered to these animals. Agencies without legal accessibility to sodium pentobarbital should explore the possibility of partnering with local veterinarians to perform routine euthanasia as well.</p> <p>In order to use carbon monoxide in an appropriate and acceptable fashion, the following minimum requirements and</p>	<p>is considered the preferred method of euthanasia. EBI is a medical procedure (rather than a physical method) and as such is much more humane for the majority of animals. Sodium pentobarbital's mechanism of action is complicated, but brings about a rapid and painless shutdown of the neurotransmitters in the brain resulting in very rapid (+/- 5 seconds) unconsciousness followed, in a few minutes by medical death. Sodium pentobarbital is the method of choice of virtually 100% of veterinarians, nearly 100% of privately funded animal shelters and most, but definitely not all municipally funded shelters.</p> <p>Proper training and recommended staff certification is essential to proper delivery of EBI. Like any method, uncaring, thoughtless or poorly trained personnel can abuse EBI and the result is a bad death for the animal.</p> <p><b>Carbon Monoxide</b></p> <p><b>CO is a method of euthanasia that sounds much better than it actually is.</b> Under relatively high concentrations of CO, a non-aquatic mammal will quickly lose consciousness. The concentration should be 6% and time to unconsciousness less than a minute. When delivered properly, carbon monoxide gas does not "sear" the lungs or cause conscious choking or gasping. On the contrary, CO from a bottled and pressurized source is breathed in with little sensation (taste or otherwise). Red blood cells have a high attraction for CO. When breathed in, CO immediately binds itself tightly to the red blood cell. Once bound up with CO, the red blood cell cannot carry its usual passenger, oxygen</p>
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<p>gassing averages \$13,230 (excluding the cost of intravenous injection as a back-up method) and that the yearly cost of euthanasia by intravenous injection averages \$12,700.</p>	<p>conditions must be met:</p> <p><b>The Equipment</b>  The chamber must be a commercially manufactured unit designed specifically for carbon monoxide euthanasia and be properly maintained. It should be stationed and utilized in a well-ventilated area and exhausted to the outside. If it is designed to euthanize more than one animal at a time, it must be equipped with independent sections or cages to separate incompatible or frightened animals. The interior of the chamber must be well-lit, and equipped with view-ports, a regulator (which maintains the gas concentration), and flow-meter (which measures the gas concentration).</p> <p>Only bottled commercial-grade gas must be used; engine or chemically-generated gas is not acceptable due to impurities and heat which are painful and inhumane. The chamber should achieve a minimum of 6% concentration of gas (the concentration should never exceed 10%, a level at which CO may become explosive) within 20 seconds, the animals must be unconscious within 45-60 seconds, and death must occur within two to four minutes. Monitoring equipment (such as an alarm) must be used during operation and, after each use the chamber must be cleaned thoroughly.</p> <p><b>The Euthanasia Process</b>  <i>Different species of animals must never be placed in the chamber together.</i> The</p>	<p>and the result is a rapid reduction of oxygen to the tissues and brain. Hypoxia (reduced oxygen -- do not confuse with suffocation or asphyxia) sets in within seconds and the animal feels sleepy and soon falls asleep, then unconscious then dies. In theory it sounds good, in actual practice there are problems.</p> <p>The number one problem with CO is in the delivery mechanism. Because it is so dangerous to non-target animals, CO must be confined in an airtight box. The box, since it is by necessity airtight, is often hot, smelly, and confining for dogs and cats. It is sometimes overloaded or improperly loaded with incompatible species or animals with respiratory problems. This results in improper absorption (uptake) of the gas and, as a result of less than optimal concentration of gas in the box, a bad death for the animal. This high potential for misuse is most troublesome. In addition, CO, especially home-built boxes are dangerous to shelter workers. A Chattanooga, Tennessee shelter worker passed out and died with his body partially inside the CO box just a few years ago. He was unloading the chamber. Finally, according to the only study ever conducted on CO euthanasia, a high percentage of adult dogs were observed struggling and in an agitated state prior to unconsciousness. Pre-euthanasia tranquilization was recommended by the study to significantly reduce this reaction.</p> <p>Although no longer considered acceptable by AVMA or national animal care and control agencies, hotbox CO, where a gasoline engine produces the gas, is still employed by a few</p>
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	<p>chamber must never be overcrowded. Animals should have enough room to sit or lie down comfortably. A euthanasia technician should be present during the entire cycle in the event there is an equipment malfunction or other problem.</p> <p>The sound of the gas entering the chamber may create fear in some animals, especially cats. They may become restless, frightened, and/or aggressive, further stressing other animals. Since the gas does not render the animals unconscious immediately, animals may appear to go through a period of resistance. Dogs may vocalize or howl and become rigid. There is uncertainty whether or not the animal is conscious at this stage of the process.</p> <p>Animals must be left in the chamber and exposed to the gas for a minimum of thirty minutes to ensure death. The chamber must be fully exhausted before animals are removed. Positive verification of death must be determined for each animal prior to disposal. There are four signs that a technician should check to verify death: lack of respiration, lack of eye reflexes, lack of heartbeat, and presence of rigor mortis. Only the fourth sign, rigor mortis, is a certain sign of death. In rare instances, an animal may appear to lack respiration, eye reflexes, or a heartbeat, but still be alive.</p> <p><b>Staff Safety</b> In 2000, an animal shelter employee in</p>	<p>agencies.</p> <p><b>Generally Recognized CO Minimum Standards</b></p> <ol style="list-style-type: none"> <li>1. Use only compressed, bottled CO.</li> <li>2. Use a commercially manufactured, purpose-built gas chamber.</li> <li>3. Chamber is in proper and safe working order and has been inspected by the manufacturer or authorized representative within 12 months.</li> <li>4. Chamber door seals are working properly and are free of cracks and tears.</li> <li>5. CO cylinders and chamber are located in a well-ventilated environment (preferably outdoors).</li> <li>6. Chamber must be equipped with view ports and be well lit inside to permit viewing.</li> <li>7. If the chamber is located inside, a CO monitor must be installed with an alarm system, which will sound both in the room with the chamber, and in a separate location.</li> <li>8. CO flow rate must be adequate to rapidly achieve a uniform CO concentration of at least 6% after animals are placed in the chamber.</li> <li>9. Personnel must be thoroughly trained and understand the proper use, limitations, and safety hazards of CO euthanasia.</li> <li>10. A thoroughly trained individual must observe (by looking through the view port) at least two complete cycles per week and note any irregularities.</li> <li>11. Animals euthanized must be healthy (free of major injury and disease which could interfere with the animal's ability to breathe and properly circulate oxygen and CO).</li> <li>12. Animals euthanized must be at least 16 weeks of age.</li> <li>13. Animals placed together in the chamber must</li> </ol>
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	<p>Tennessee died from carbon monoxide exposure while using CO to euthanize animals. Staff must be fully notified of potential health risks involved with using CO. Carbon monoxide is a hazardous substance: it is highly toxic and has no odor, no color, and no taste. It is the leading cause of accidental poisoning in the United States and repeated exposure to CO, even at low levels, can result in many long-term effects including (but not limited to): impaired memory, breathing difficulties, muscle weakness, heart irregularity, and brain damage. Exposure among pregnant women can cause low birth weight in their infants. The use of a CO chamber should be closely monitored, and in compliance with Occupational Safety and Health Association (OSHA) requirements. According to OSHA, the current permissible exposure limit for CO is 50 parts per million parts of air per cubic meter.</p> <p>Although some people believe that using CO is safer because staff does not have to individually handle and/or restrain animals, loading animals in the chamber does require staff to handle animals, including those who are scared, aggressive, feral, or fractious. These animals may require prior sedation, tranquilization, or anesthesia to insure employee safety.</p> <p>One of the most critical responsibilities of those in the animal care and control field is to provide the most humane death possible for companion animals when euthanasia is</p>	<p>be of the same species and compatible.</p> <p>14. Chamber must be thoroughly cleaned between cycles to minimize odors.</p> <p>15. Dogs should be tranquilized with acepromazine maleate (.3 mg/lb) at least 10 minutes prior to placement into the chamber. This will "significantly decrease behavioral and physiologic response of dogs" Chalifoux and Dallaire: 1983.</p> <p>16. Animals euthanized must be verified for cardiac standstill (death) prior to disposal of the carcass.]</p> <p>Another problem with CO is that the gas does not get into the bloodstream effectively if the animal has respiratory deficiencies due to old or young age, disease or injury. AVMA recommends an EBI backup for such animals. If done properly by the animal care and control agency, this backup is available and personnel are trained in its use. This begs the obvious question: why not use EBI in the first place?</p> <p>Much is made of two arguments that imply that CO is a better euthanasia method for animal shelters. The first of the two arguments is that CO is cheaper than lethal injection. It isn't. Numerous cost studies prove that the cost difference is negligible. When done properly, both CO and EBI are nearly equal in cost per animal. What is different is that one person can administer CO euthanasia while EBI properly takes two. The second argument is that CO, since it's a [put the animal in a box, close the door, push a button and] walk away method, is emotionally easier for the employee. This is sheer fantasy typically uttered by</p>
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	<p>necessary. The HSUS strongly recommends that all animal care and control agencies evaluate current euthanasia procedures frequently, ensure that animals are being properly handled, and verify that employees are competent, compassionate, and properly trained.</p> <p>For more information on euthanasia methods, policies, and procedures, see <b>The HSUS Statement on Euthanasia for Dogs and Cats.</b></p> <p><i>Last Updated 8/23/05</i></p> <p>--</p>	<p>people who do not perform euthanasia or who have limited experience with EBI. Those who care for the animals under their protection, always want to do what's best for those animals when and if it comes time to euthanize them.</p> <p>--Doug Fakkema</p>
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