THE HUMANE SOCIETY OF THE UNITED STATES

Statement about the Use of Carbon Dioxide (CO_2) in Animal Shelters

While The Humane Society of the United States (HSUS) is strongly opposed to the use of any type of gas chamber in a shelter setting, the use of carbon dioxide (CO_2) chambers is particularly troubling. Recent evidence suggests that CO_2 causes pain and distress even at low concentrations (humans describe the effects of CO_2 exposure as "excruciating"), and animals continue to suffer for several minutes until they lose consciousness. In fact, CO_2 is so aversive (painful and distressing) that starving laboratory animals will actually forgo food when it is offered in a chamber containing CO_2, and they will chose to flee a comfortable environment and enter a frightening, unknown space when CO_2 is introduced.

As far back as 2006, the scientific community was questioning the ethics of using CO_2 to kill laboratory animals:

> Exposing animals to carbon dioxide can cause distress because acutely sensitive CO_2 chemoreceptors and pH receptors have evolved in vertebrates, with the result that carbon dioxide is a potent respiratory stimulant that rapidly induces dyspnoea [impaired breathing, often called "air hunger"] or breathlessness. It can also cause discomfort and pain because it is converted to carbonic acid in the mucosa of the eyes, nose and mouth, which activates polymodal nociceptors [specialized nerve cells that send pain signals in response to stimuli]. Given a free choice, animals avoid carbon dioxide when concentrations rise above a certain threshold. When they do not have a free choice, i.e. they are confined to a chamber, animals will sometimes attempt to escape from the gas. All methods of delivering carbon dioxide with the aim of killing animals can therefore present welfare problems, because concentrations of CO_2 that will induce anaesthesia or cause death will inevitably cause some degree of aversion.
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> Newcastle Consensus Meeting on Carbon Dioxide Euthanasia of Laboratory Animals (2006)

At the 2014 AVMA Humane Endings Symposium, researchers questioned the use of CO_2 even at concentrations approved as conditionally acceptable in the AVMA's 2013 Panel on Euthanasia. Speakers like Dr. Debra Hickman (DVM, MS, DACLAM, DACAW) director of the Laboratory Animal Resource Center at Indiana University, noted that for a method to meet AVMA's definition of "euthanasia" (a good death) it must: a) produce a rapid loss of consciousness; and b) minimize pain and distress. Based on her extensive study, she questioned whether CO_2 at any concentration would be capable of meeting that definition. Although some methods of introducing CO_2 to animals are much more painful than others, even at lowest (10 percent) concentrations, observers document signs of distress as early as 30 seconds after the gas is introduced, and that distress continues for several minutes until consciousness is lost.

CO_2 is certain to cause pain and distress to every shelter animal who is exposed to it, regardless of concentration level or method of introduction. As such, it is one of the most inhumane methods of euthanasia being practiced today. It is simply unacceptable for use in a shelter setting, where pets are supposed to be kept safe from suffering.