**IACUC Training Exercise #4 - 2018**

*The following exercise may be useful in stimulating discussion regarding compliance with PHS Policy and VA Handbook 1200.07. To facilitate discussion, page 1 of the exercise may be distributed to the IACUC members prior to a meeting. After a few minutes of discussion about the exercise during the meeting, the remaining pages of the exercise may be distributed to provide ideas for the committee’s consideration.*

Tomorrow Dr. Harvey Miller, a radiation oncologist, is going on vacation for two weeks; he can hardly wait but wanted to get his ACORP finished before he left. Dr. Miller decided it would be wise to check with Ann Marie, the IACUC Coordinator, before he officially submitted his latest ACORP. The new ACORP uses a rat model of liver cancer and investigates if a new combined therapy is more effective. Ann Marie expected the ACORP to be in pretty good shape due to Dr. Miller’s previously phone calls and emails. She scanned the ACORP but stopped when she got to item U (see below). What do you think?

**U. Termination or removal from the protocol**. Complete each of the following that applies:

► () Some or all animals will NOT be euthanatized on this protocol. Describe the disposition of these animals. (Use Appendix 9 to document any “departures” from the standards in the *Guide* represented by these methods of disposition. Consult the IACUC or the Attending Veterinarian for help in determining whether any “departures” are involved.)

►

► (X) Some or all animals MAY be euthanatized as part of the planned studies. Complete the table below to describe the exact method(s) of euthanasia to be used. (Use Appendix 9 to document any departures from the standards in the *Guide* represented by these methods. Consult the IACUC or the Attending Veterinarian for help in determining whether any “departures” are involved.)

|  |  |  |  |
| --- | --- | --- | --- |
| Check each method that may be used on this protocol | Method of Euthanasia | Species | AVMA Classification |
| Acceptable | Conditionally Acceptable | Unacceptable |
| **(X)** | CO2 from a compressed gas tank Duration of exposure after apparent clinical death► **at least** **1 minute** Method for verifying death► **absence of heartbeat and respiration** Secondary physical method► **removal of vital organs including heart, lungs, and liver.** |  | **(X)** | ( ) | ( ) |

Ann Marie asked Dr. Miller if he was sure he had marked the correct AVMA classification check box for euthanasia using carbon dioxide. Dr. Miller looked puzzled and replied I know it is an acceptable method, I have been euthanizing rats with carbon dioxide for years. Ann Marie said that’s almost right; it is an acceptable method with conditions; she showed him the recommendations for carbon dioxide euthanasia in the AVMA Guidelines for Euthanasia of Animals 2013 Edition (see page 26).

*“General recommendations*—Carbon dioxide is ac­ceptable with conditions for euthanasia in those species where aversion or distress can be minimized. Carbon di­oxide exposure using a gradual fill method is less likely to cause pain due to nociceptor activation by carbonic acid prior to onset of unconsciousness; a displacement rate from 10% to 30% of the chamber volume/min is recommended.25,152,193,195 Whenever gradual displace­ment methods are used, CO2 flow should be maintained for at least 1 minute after respiratory arrest.153 If ani­mals need to be combined, they should be of the same species and, if needed, restrained so that they will not hurt themselves or others. Immature animals must be exposed to high concentrations of CO2 for an extended period of time to ensure death. Oxygen administered together with CO2 appears to provide little advantage and is not recommended for euthanasia. The practice of immersion, where conscious ani­mals are placed directly into a container prefilled with 100% CO2, is unacceptable. A 2-step process, where ani­mals are first rendered unconscious and then immersed into 100% CO2, is preferred when gradual displacement methods cannot be used. Immersion of poultry in lesser concentrations is acceptable with conditions as it does not appear to be distressing.

Carbon dioxide and CO2 gas mixtures must be sup­plied in a precisely regulated and purified form without contaminants or adulterants, typically from a commer­cially supplied cylinder or tank. The direct application of products of combustion or sublimation is not accept­able due to unreliable or undesirable composition and/or displacement rate. As gas displacement rate is critical to the humane application of CO2, an appropriate pres­sure-reducing regulator and flow meter or equivalent equipment with demonstrated capability for generating the recommended displacement rates for the size con­tainer being utilized is absolutely necessary.”

Ann Marie explained that Dr. Miller needed to mark carbon dioxide euthanasia as conditionally acceptable and complete item U.1, which asks how the conditions will be met. The revised item U

is shown on the next page.

**U. Termination or removal from the protocol**. Complete each of the following that applies:

► () Some or all animals will NOT be euthanatized on this protocol. Describe the disposition of these animals. (Use Appendix 9 to document any “departures” from the standards in the *Guide* represented by these methods of disposition. Consult the IACUC or the Attending Veterinarian for help in determining whether any “departures” are involved.)

►

► (X) Some or all animals MAY be euthanatized as part of the planned studies. Complete the table below to describe the exact method(s) of euthanasia to be used. (Use Appendix 9 to document any departures from the standards in the *Guide* represented by these methods. Consult the IACUC or the Attending Veterinarian for help in determining whether any “departures” are involved.)

|  |  |  |  |
| --- | --- | --- | --- |
| Check each method that may be used on this protocol | Method of Euthanasia | Species | AVMA Classification |
| Acceptable | Conditionally Acceptable | Unacceptable |
| **(X)** | CO2 from a compressed gas tank Duration of exposure after apparent clinical death► **at least** **1 minute** Method for verifying death► **absence of heartbeat and respiration** Secondary physical method► **removal of vital organs including heart, lungs, and liver.** |  | ( ) | **(X)** | ( ) |

* 1. For each of the methods above that is designated as “Conditionally Acceptable” by the AVMA, describe how the conditions for acceptability will be met:

► Consistent with current AVMA recommendations, a commercially-supplied cylinder equipped with a regulator will be used to gradually fill the euthanasia chamber with carbon dioxide at a displacement rate from 10% to 30% of the chamber volume/min. Carbon dioxide flow will continue for at least 1 minute after breathing ceases. Death is verified by absence of vital signs followed by collection of vital organs.

Sources:

<https://www.avma.org/KB/Policies/Documents/euthanasia.pdf>