

## **DETERMINATION OF LEVELS OF PAIN & DISTRESS** **DEFINITIONS, POLICIES AND GUIDELINES**

- **USDA Pain Levels:**

- Level B: Breeding or Holding Colony Protocols
- Level C: No more than momentary or slight pain or distress. For example: euthanized for tissues; just observed under normal conditions; positive reward projects.
- Level D: Pain or distress relieved with anesthetics, analgesics and/or tranquilizer drugs or other methods for relieving pain or distress. For example: survival surgery, non-survival surgery, induced infections or antibody production with appropriate anesthesia and post-op/post-procedure analgesia when necessary.
- Level E: Pain or distress or potential pain or distress that is not relieved with anesthetics, analgesics and/or tranquilizer drugs or other methods for relieving pain or distress.

(Note, there is no USDA level A.)

**Euthanasia** - Euthanasia is the act of inducing humane death in an animal. Euthanasia techniques must result in rapid unconsciousness followed by cardiac or respiratory arrest and ultimate loss of brain function. In addition, the technique should minimize any stress and anxiety experienced by the animal prior to unconsciousness. Stress may be minimized by technical proficiency and humane handling of the animals to be euthanized. For guidance, see <https://www.avma.org/KB/Policies/Documents/euthanasia.pdf>. (2013 Edition)

- **Non-Survival Surgery** includes any surgical procedure where there is the potential for more than momentary or slight pain prior to death, including those due to procedures requiring extended time periods. Any protocol which includes surgical procedures not directly associated with euthanasia and occurring prior to euthanasia should be categorized as non-survival surgery.

### **Guidelines for determining USDA classification in protocols involving tissue collection before/after euthanasia and/or animal perfusion:**

- If an animal will be euthanized by an approved physical or chemical method of euthanasia solely for the collection of tissues (after the animal's death), the procedure should be classified as USDA C.
- If an animal will be anesthetized so that non-vital tissues can be collected (liver or skin biopsy), and the animal will then be allowed to recover, the procedure should be classified as USDA D (survival surgery).
- If an animal will be anesthetized so that non-vital tissues can be collected (liver or skin biopsy, etc.), and the animal will then be euthanized, the procedure should be classified as USDA D (non-survival surgery). In this scenario, it is necessary to justify why the animal could not be euthanized (USDA category C) rather than anesthetized.

- If an animal will be anesthetized so that vital tissues can be collected (heart, both kidneys or lungs, whole liver, etc.), the animal will obviously succumb to the procedure. To determine whether this will be euthanasia or non-survival surgery, we must consider the definition of euthanasia. A critical component of this definition is "rapid unconsciousness followed by loss of cardiac, respiratory and brain function". Based on this definition, procedures which require tissue manipulation or other prolonged (more than a few minutes) techniques prior to the animal's death should be classified as non-survival surgery (USDA D). Similarly, if an animal will be anesthetized so that the tissue can be collected in the "freshest" possible state (i.e., heart) and the tissues will be rapidly excised, the procedure should be classified as euthanasia (USDA C). (Note: In this scenario, it is difficult to justify why the animal couldn't be euthanized rather than anesthetized.)
- If an animal will be anesthetized so that it can be chemically perfused, the same "test of time" applies (i.e., long, technical manipulations should be classified as USDA D, while rapid intravascular injection of the perfusate without other manipulations should be classified as USDA C).
- Agricultural animals used in teaching protocols (e.g. cows, horses) should be classified as pain level "C," as a number of routine activities (e.g. blood sampling, injections of vaccines or pharmacologic agents) involve momentary pain. Any agricultural animal undergoing a procedure which involves more than momentary pain/distress such as dehorning or the surgical correction of a displaced abomasum must receive intra- and post-procedural analgesia as appropriate to the invasiveness of the procedure.

**NOTE:** Because the USDA classification system is based on the "potential for pain, distress or discomfort," the anesthetic/euthanasia drug dose becomes a critical concern. For example, if a known "euthanasia dose" of pentobarbital will be administered, drug irreversibility is assumed. Thus, once the animal is confirmed to be in an anesthetic plane (toe pinch response, etc.), tissues can be collected/ procedures can be performed without the concern about what the animal is perceiving. This procedure would then be classified as USDA C. The Committee recommends using a euthanizing dose whenever possible. Other methods may be appropriate with proper scientific justification.