

BMSC Animal Care Committee

CCAC Categories of Invasiveness

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Please see the CCAC website for an extensive list of examples:

http://www.ccac.ca/Documents/Standards/Policies/Categories_of_invasiveness.pdf

A	Experiments on most invertebrates or on live isolates Does NOT require approval from the BMSC Animal Care Committee Examples: the use of tissue culture or tissues; the use of eggs, protozoa or other single-celled organisms; experiments involving non-cephalopod invertebrates
B	Experiments with cause little or no discomfort or stress Examples: short-term and skillful restraint of animals for purposes of observation or physical examination; blood sampling; injection of materials in amounts that will not cause adverse reactions by the following routes: intravenous, subcutaneous, intramuscular, intraperitoneal, or oral, but not intrathoracic or intracardiac (Category C); acute non-survival studies in which the animals are completely anesthetized and do not regain consciousness; approved methods of euthanasia following rapid unconsciousness, such as anaesthetic overdose or decapitation preceded by sedation or light anaesthesia; short periods of food and/or water deprivation equivalent to periods of abstinence in nature
C	Experiments which cause minor stress or pain of short duration Examples: cannulation or catheterization of blood vessels or body cavities under anaesthesia; minor surgical procedures under anaesthesia, such as biopsies or laparoscopy; short periods of restraint beyond that for simple observation or examination, but consistent with minimal distress; short periods of food and/or water deprivation which exceed periods of abstinence in nature; behavioural experiments on conscious animals that involve short term, stressful restraint; exposure to nonlethal levels of drugs or chemicals. Such procedures should not cause significant changes in the animal's appearance, in physiological parameters such as respiratory or cardiac rate, or fecal or urinary output, or in social responses. During or after Category C studies, animals must not show self-mutilation, anorexia, dehydration, hyperactivity, increased recumbency or dormancy, increased vocalization, aggressive defensive behaviour, or demonstrate social withdrawal and self-isolation. Note: wild caught animals necessitate a Category C or greater
D	Experiments which cause moderate to severe distress or discomfort Examples: major surgical procedures conducted under general anaesthesia, with subsequent recovery; prolonged (several hours or more) periods of physical restraint; induction of behavioural stresses such as aggression, or predator-prey interactions; procedures which cause severe, persistent, or irreversible disruption of sensorimotor organization; induction of anatomical and physiological abnormalities that will result in pain or distress; the exposure of an animal to noxious stimuli from which escape is impossible; the production of radiation sickness; exposure to drugs or chemicals at levels that impair physiological systems. Procedures used in Category D studies should not cause prolonged or severe clinical distress as may be exhibited by a wide range of clinical signs, such as marked abnormalities in behavioural patterns or attitudes, prolonged anorexia, circulatory collapse, extreme lethargy or disinclination to move, and clinical signs of severe or advanced local or systemic infection, etc.
E	Experiments which cause severe pain near, at, or above the pain tolerance threshold of unanaesthetised conscious animals **No longer permitted unless research relates directly to public health emergencies Examples: Not necessarily confined to surgical procedures, but may include exposure to noxious stimuli or agents whose effects are unknown; exposure to drugs or chemicals at levels that (may) markedly impair physiological systems and which cause death, severe pain, or extreme distress; completely new biomedical experiments which have a high degree of invasiveness, behavioural studies about which the effects of the degree of distress are not known; use of muscle relaxants or paralytic drugs without anaesthetics; burn or trauma infliction on unanaesthetised animals; a euthanasia method not approved by the CCAC; any procedures (e.g., the injection of noxious agents or the induction of severe stress or shock) that will result in pain which approaches the pain tolerance threshold and cannot be relieved by analgesia (e.g. when toxicity testing and experimentally-induced infectious disease studies have death as the endpoint)