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GUIDELINES FOR USE OF HAZARDOUS CHEMICALS IN ANIMALS**Table of Contents**

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1.0 Introduction

1.1 Purpose

The purpose of this document is to provide guidance on the use of hazardous chemicals that are administered to animals for experimental purposes. Chemical in Animals forms are reviewed by the Environmental Health & Safety Office (EHSO) and the Chemical Safety Subcommittee of the Research Health and Safety Committee (RHSC).

1.2 Scope

These guidelines are intended for researchers that administer chemicals to animals for experimental purposes at Emory University and Yerkes National Primate Research Center. Certain chemicals are exempt from the review process and therefore do not require approval by the Chemical Safety Subcommittee of the RHSC.

1.3 Definitions

Animal Control Level. A set of controls that match the characteristics and hazard(s) of chemical(s) administered to research animals. This may include use of additional engineering controls, administrative controls, training, use of personal protective equipment and animal facility practices. Animal control levels range from 1 to 4, with 1 being the lowest risk and 4 being the highest risk. See Appendix A for a complete description of each animal control level.

Chemical Safety Approval/Protocol. A registration of the research project and the personnel, chemicals and procedures involved.

Exempted Chemicals. Chemicals that do not require approval or review by the Chemical Safety Subcommittee. Examples include analgesics, anesthetics, standard of care medications, perfusion and tissue fixatives, and chemicals that have been reviewed and deemed non-hazardous by the Chemical Safety Subcommittee.

Hazard Assessment. The document that lists approved chemicals, control levels, and required controls when handling and administering chemicals to research animals. The assessment is created by EHSO based on the ACL of the agent(s) in use and reviewed by the Chemical Safety Subcommittee.

Non-Exempted Chemicals. Chemicals that require review and approval by the Chemical Safety Subcommittee.

1.4 Responsibilities

Environmental Health and Safety Office (EHSO)

- Manages electronic submission of the Chemicals in Animals form in BioRAFT.

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- Conducts preliminary review of the Chemical in Animals form.
- Ensures that all necessary information is obtained from the Principal Investigator regarding preparation, handling, use, administration, and disposal of hazardous drugs or chemicals given to animals.
- Mediates any questions that the Chemical Safety Subcommittee may have for the Principal Investigator.
- Ensures that personnel listed in the Chemical Safety Approval letter have completed the required training.
- Conducts post approval inspections of spaces where approved chemicals are handled and administered.

Principal Investigators

- Notifies EHSO of hazardous chemicals that are administered to research animals through the Chemicals in Animals Form in BioRAFT.
- Certifies Chemicals in Animals Form if completed by compliance liaison or designee.
- Ensure that personnel read and observe the practices indicated the protocol's hazard assessment.
- Ensures that personnel follow policies regarding safe work practices involving chemicals as outlined in the Chemical Hygiene Plan.
- Contacts EHSO to update an approved protocol when there is a need to change agents in use, lab personnel, species, or project titles.

Students, Staff & Research Associates

- Completes all required trainings.
- Follows specific procedures that are documented on the hazard assessment.

Chemical Safety Subcommittee

- Reviews chemical safety protocols and hazard assessment as required.
- Assigns animal control levels to administered agents.
- Outlines safe work practices for protection of lab and animal care personnel.
- Evaluates chemicals based on experimental conditions to determine risks to personnel.

Division of Animal Resources

- Provides animal husbandry services for the care and maintenance of research animals.
- Conducts animal chemical safety training.
- Provides hazard signage materials as required.

1.5 Training Requirements

Research Lab Safety Training. Personnel listed on the Chemical in Animals form will be

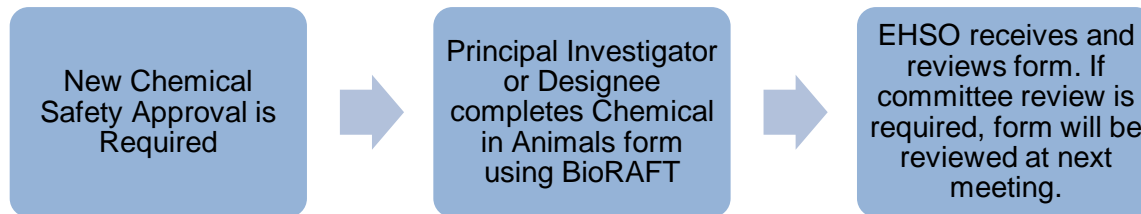
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required to complete online Research Laboratory Safety Training. This EHSO training is completed annually through ELMS.

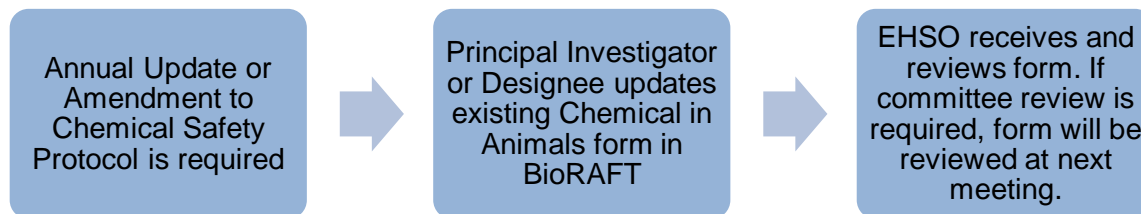
Animal Chemical Safety Training: Personnel listed as handling chemicals and personnel that handle animals following administration of chemicals at animal control levels above level 1, will be required to complete animal chemical safety training. This training is offered through DAR, or at Yerkes, depending on the facility where the animals are housed.

2.0 Chemical Safety Protocol Submission and Approval Process

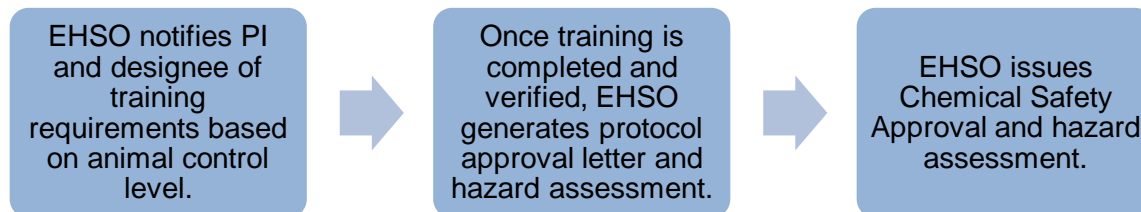
2.1 New Protocols



2.2 Existing Protocols



2.3 Documentation & Communication



3.0 Non-Exempted Chemicals

Table 1.0 gives examples of chemicals that require Chemical Safety Approval. The table is not an exhaustive list of chemicals, and is only meant to serve as a guide.

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Table 1.0 – Examples of Non-Exempted Chemicals

Hazard	Examples
Acetyl cholinesterase inhibitors	Parathion, Physostigmine, Diisopropylfluorophosphate
Carcinogens	Benzidine, Ethyleneimine, Cyclophosphamide, Tamoxifen, Doxorubicin HCl, ENU, MNU, Streptozotocin, Nickel compounds, Dimethyl sulfate, Etoposide (VP-16), Urethane, Azoxymethane
Chemotherapeutics	Busulfan, Cisplatin, Paclitaxel, Erlotinib, Fludara, Sutent, Pentostatin
Highly regulated chemicals	Heptachlor, Physostigmine, DDT, ENU, MNU, Streptozotocin, Cadmium, Chromium, Lead, Mercury, Aldrin, Dieldrin, Heptachlor, PCBs
Irritants	5-FU, Phosgene
Irreversible Illness	Thalidomide
Mutagens	BrdU, Ethidium Bromide
Nanoparticles	Carbon nanotubes, Polystyrene, Titanium Dioxide
Sensitizers	Malathion, Isocyanates, Nickel Salts
Acute or Target Organ Toxins	MPTP, Tetrodotoxin, Picrotoxin
Teratogens	Busulfan, 5-FU, Rotenone, RU 486, Bleomycin Sulfate, Erlotinib, Fludara
Toxic and Toxins	Rotenone, Chlorpyrifos, DMBA, Aldrin, Chlorpyrifos, Dieldrin, Dimethyl sulfate, Parathion, Phosgene, Potassium Cyanide, PCBs, Nickel Sulfide

4.0 Exempted Chemicals

Table 2.0 gives examples of chemicals that do not require chemical safety approval. The table is not an exhaustive list of chemicals, and is only meant to serve as a guide.

Table 2.0 – Examples of Exempted Chemicals

Class	Examples
Standard of Care Medications	Acetaminophen, Amiodarone, Aspirin, Heparin, Meloxicam, Prozac, Saline, Sodium Bicarbonate.
Analgesics & Anesthetics	Buprenorphine, Isoflurane, Ketamine, Telazol and Tricaine.
Perfusion & Tissue Fixatives	Acrolin, Formalin, Formaldehyde, Glutaraldehyde, Paraformaldehyde.

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Appendix A: Animal Control Levels

Animal Control Level	Description
1	<ul style="list-style-type: none"> • Standard Animal Care Facility signage • PPE: Reusable gown and nitrile gloves • Use Biological Safety Cabinet when handling animal during and post-administration of chemicals
2	<ul style="list-style-type: none"> • Animal Control Level 1 practices must be followed plus: • Cages may be on a static cage rack based on hazard assessment • Entrance door(s) must be labeled to warn of the chemical hazard • Cages must be labeled to warn of the chemical hazard • Additional PPE: Disposable gown • Animal Chemical Safety Training • If chemical is administered in water or food, it must be collected for chemical waste disposal as determined by EHSO.
3	<ul style="list-style-type: none"> • Animal Control 2 Practices and Corresponding Lab Safety Practices must be followed plus: • Cages must be on a static rack based on hazard assessment • Cage changes must occur in a Biological Safety Cabinet • Bedding / excreta must be managed as contaminated and incinerated • Additional PPE required: safety glasses
4	<ul style="list-style-type: none"> • Animal Control 2 & 3 Practices and Corresponding Lab Safety Practices must be followed plus: • Animals must be isolated in their own room or animal bay • Chemical administration should occur in fume hood, glove box, or with appropriate respiratory protection • Luer-lock syringes must be used for chemical injection • Additional PPE required: double nitrile gloves, appropriate respiratory protection, appropriate eye protection, and shoe covers,