University Animal Care Committee Standard Operating Procedure		
Document No: SOP 14.13	**Subject:** Working Safely with Cytotoxic Drugs and Chemicals	
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Location: Queen's University

Responsibility: Principal Investigators, Research Staff, Veterinary Staff

Purpose: **The purpose of this Standard Operating Procedure (SOP) is to describe the procedure for working safely with mice that have been treated with cytotoxic drugs and chemicals, including, but not limited to the following: Tamoxifen, Deschloraclozapine, Bleomycin, Pacilitaxel, Trastuzumad, Cyclophoshamide, 5-Ethynyl-2'-deoxyuridine (EDU), Bromodeoxyuridine (BrDU) .**

1. Introduction and Definitions:

a. Administration route and duration of compound use can vary based on individual study requirements and must follow what is approved in the Animal Use Protocol. Examples are PO, IP injection, IV injection or in a special diet formulation.
b. An Animal Welfare Assessment is required for all mice exposed to cytotoxic compounds. Anorexia, body condition loss and weight loss are potential side effects. Monitoring and supportive care may be required. If using Tamoxifen please also refer to UACC SOP 7.31 Tamoxifen Administration (Mice).
c. These compounds or metabolites are excreted in the feces and urine of animals after administration, and therefore the animals and cage bedding are considered hazardous for a minimum of 72 hours following the final administration plus one cage change.
d. Research staff must receive laboratory specific training regarding the proper handling as outlined in their Animal Use Protocol; Handling of the compound for solution preparation must be completed in a fume hood or Class II, Type B2 BSC. All compounds must be brought into the animal facility in solution and ready for administration.
e. Compounds are not to be stored in the animal facility; They are to be stored in laboratory locations.
f. Cytotoxic drugs or chemicals must be disposed through EH&S as hazardous waste under category "Pharmaceutical and Cytotoxic"
g. Handling of animals, for example, during administration or cage change, must be completed in a Class II, Type A2, BSC.

Abbreviations: Animal Care Services **ACS**, Principal Investigator **PI,** subcutaneous **SC**, intravenous **IV**, intraperitoneal **IP,** intramuscular **IM**, per os **PO,** per rectum **PR,** biological safety cabinet **BSC,** Tamoxifen **TAM,** Accelerated Hydrogen Peroxide **AHP**

2. Personal Protective Equipment:

- Two pairs of nitrile gloves *gloves must be pulled up over the cuff of the gown to ensure no skin is exposed*
- Isolation Gown (i.e. back closure gown)
- ASTM Level 2 surgical mask
- Eye protection (i.e. either face shield/safety glasses or the BSC glass sash pulled down to the appropriate level)

3. Procedures:

a. Cages must be labeled with a facility provided 'Cytotoxic' flag following administration. The start and end dates of administration MUST be added to the cage flag. If mice are on continuous treatment, the end date of administration can be indicated as 'ongoing', and the cage will continue to be treated as hazardous until this is updated. Administration dates are critical for animal care staff to be able to determine the hazardous period for each individual cage.

b. The administration details (i.e. route of admin, date, and animal health information) must be noted in the procedure section on the back of each individual animal's cage card.

c. Animal Care Staff perform daily husbandry and health checks by visualizing the mice through the cage.

d. If the cage is to be opened, it is brought to the BSC where the lid can be removed. When finished, the cage lid is closed before removing from the BSC, and the cage is placed back on the rack in its designated space.

e. Animals and bedding are considered hazardous for a minimum of 72 hours (3 days) after compound exposure.

f. The first cage change is to be done after the completion of the hazardous period, no sooner than the 72-hour period (3 days) following the last administration.

g. Cage change procedures are as follows:
    i. Don second pair of nitrile gloves.
    ii. While working in the BSC, mice are transferred to a clean cage (i.e. with fresh bedding, enrichment, food hopper, cage card holder and fresh chow).
    iii. The dirty cage is closed back up and the 'Cytotoxic' cage flag remains within the cage holder on the front of the cage.
    iv. The outside of the cage is wiped with accelerated hydrogen peroxide and transferred from the hood onto a trolley.
    v. The cage is then placed on the dirty cage rack for transportation to the dirty-side cage washer room.
    vi. When finished changing all treated cages, wipe the hood with AHP wipe and remove outer gloves. Place wipes and outer gloves into a carcass bag and dispose of the bag in the carcass collection bin for incineration.
    vii. The spigot can be removed from the cage rack and wiped with peroxide. A clean spigot is placed on the rack and the cage is returned to its location. Note: spigots (or water bottles if used) are not considered to be hazardous. After wiping with peroxide, they can be placed into the dirty spigot collection box within the holding room.

h. Following the first cage change, there is no need for further safety precautions to be taken regarding the animals or the cages as long as the animals have not received additional exposure.

i. If cages are being fed a cytotoxic chow (most commonly Tamoxifen Diets), the cage is considered hazardous for the length of time that the special diet is being fed. Once the diet is removed and replaced with regular chow, the cage is considered hazardous for a minimum of 72 hours plus one cage change (as above).

j. When changing cages are receiving ongoing treatment, please use a blank 'Cytotoxic' flag on the dirty cage to be sent to cagewash and keep the original tag with the administration dates on the cage with the animals.

k. All cage bedding should be handled using procedures that minimize aerosolization, this is accomplished by dumping bedding within a ventilated dumping station.

l. Animal carcasses are double bagged and placed in carcass collection fridge for incineration.

m. Procedures for handling dirty cages and bedding:
   i. Dirty cages are brought to the dirty side cage washer room for processing.
   ii. Once in the dirty-side cage washer room, before opening any cages, don a second pair of nitrile gloves and face shield.
   iii. Turn on the ventilated disposal system.
   iv. Cages are opened only while working in the stand-alone ventilated disposal station, they are not dumped into the vacuum bedding disposal system.
   v. The enrichment devices and food hoppers are collected for washing and transferred directly into the washer for immediate washing. Bedding is then dumped into the double lined refuse collection bin within the disposal station.
   vi. When finished dumping all hazardous cages, outer gloves are removed and placed in the refuse bin, the refuse bin liners are tied securely prior to removal from the disposal station. This bin is to be emptied following use and never left sitting with dirty bedding in it.
   vii. Once bags are tied, the disposal station is wiped down with the AHP solution and then turned off.
   viii. Bedding is placed in the B2 hazardous waste bin (brown waste barrel or chest freezer) for incineration. The barrels should be taped up and labeled with the Cytotoxic sticker.

References:

SOP Revision History:

Date	New Version
January 2025	Updated to align with UACC SOP 7.31 Tamoxifen Administration (Mice); Added information regarding new cage flag with administration dates; Removed the requirement for a special request.
June2026	Updated wording to broaden the scope of this SOP for the various cytotoxic drugs being administered in the animal facility. Title changed from *Working Safely with Tamoxifen* to *Working Safely with Cytotoxic Drugs and Chemicals*