

Use of Ether

Purpose:

To provide guidance for the use of diethyl ether (ether) in the laboratory and animal facility environment. *NOTE: Ether can only be used as a distresser for research purposes. Use of ether for anesthesia or euthanasia is not permitted, even with a scientific justification.*

Precautions:

The following information can be used to complete the Safety section of your animal protocol.

1. Chemical hazard agents – (Identify the category of the chemical): (*Select the following*)
 - Mutagen
 - Irritant (respiratory/eye/skin)
2. Containment preparation – (Containment equipment required for the preparation of the chemical): (*Select both of the following*)
 - Fume Hood
 - Other: Ether should be stored away from strong acids, peroxides, and oxidizers as it may react and cause an explosion. Ether can form explosive peroxides from exposure to light and air that can be explosive upon contact. Therefore, ether should be stored in a flammables safety cabinet and monitored for formation of peroxide crystals. Ether containers should be disposed of one year after opening them. Please label containers with open date and one year expiration date to assure proper disposal.
3. Containment animals – (Containment equipment required for chemical administration and handling animals after exposure to the chemical): (*Select one of the following*)
 - No special containment needed
4. PPE needed - (for handling live animals, carcasses or animal waste/dirty bedding): (*Select all of the following*)
 - Exam gloves – nitrile
 - Safety glasses/goggles
 - Lab coat or disposable gown
 - Other: Long pants, closed toe shoes, cotton based clothing and a flame resistant lab coat. Ether can permeate nitrile gloves in about 15 minutes. Work should be limited to less than 15 minutes between glove changes.

5. Waste Disposal: (disposal of animal waste/dirty bedding from animals after exposure to the chemical) (*Select both options and include additional information for Other*)
 - Bag animal waste/dirty bedding and place sealed bag in secondary container and place secondary container in regular trash.
6. Carcass disposal: (*Select both options and include additional information for Other*)
 - Pick up by EH&S for incineration.
 - Other: Carcasses should be allowed to off-gas within a Fume Hood for at least 15 minutes before being bagged and placed into an explosion proof freezer until picked up by EH&S for incineration.
7. Chemical human risk: (*Add the following*):
 - Ether is highly flammable and combustible peroxide forming chemical. Prolonged storage of ether could lead to the formation of explosive peroxides, usually in crystalline form. If peroxide crystals are found, do not use the bottle and contact Chemical Safety immediately. Ether has also been shown to have mutagenic effects and causes skin, eye, and respiratory tract irritation. Inhalation of vapors may cause narcosis, nausea, loss of consciousness, dizziness and drowsiness. Ether may cause digestive tract irritation and central nervous effects through ingestion. Symptoms include headache, excitement, fatigue, nausea, vomiting, stupor, and coma. The short-term exposure limit for ether is currently 500 ppm (time-weighted over 15 minutes).

Additional Information: Unused, expired, or unwanted mixtures of this compound that were intended to be applied to animals are regulated as a “Hazardous Waste Pharmaceuticals”. The unwanted portion should be contained (bagged or other sealed container), labeled as a “Hazardous Waste Pharmaceuticals”, an applicable descriptor (flammable, toxic etc.), and the date first item is placed into the container. Varying waste pharmaceuticals can be placed into the same container and offered to UW-EHS for disposal. The waste items must be offered to UW-EHS within one year of the date on the container. Contact UW-EHS for disposal via the following link:
<https://ehs.wisc.edu/disposal-services/chemical-disposal/chemical-disposal-surplus-pick-up-form/>

References:

“Chemical Sampling Information: Ethyl Ether”, Occupational Safety & Health Administration. https://www.osha.gov/dts/chemicalsampling/data/CH_240480.html

“NIOSH Pocket Guidance to Chemical Hazards”, Center for Disease Control and Prevention. <http://www.cdc.gov/niosh/npg/npgd0277.html>

“PubChem Compound Summary: Ether”, National Center for Biotechnology Information.
<http://pubchem.ncbi.nlm.nih.gov/summary/summary.cgi?cid=3283#x50>