

Ethanol: Purchase and Use Procedures

Purpose and Scope

The purpose of this document is to provide information and instructions on proper handling and purchase of ethanol (also known as ethyl alcohol, absolute alcohol, or EtOH).

This program applies to West Chester University employees who order and handle ethanol for laboratory use.

Responsibilities

Environmental Health and Safety (EHS)

- Audit departmental compliance with the requirements of this program and according to state and federal regulation.
- Determine proper storage and disposal methods.
- Maintain permits for purchase and use of ethanol.

Faculty

- Follow procedures as well as maintain records and inventory of ethanol use and storage.
- Properly label, transport, and store ethanol.

Department Heads

- Ensure faculty are in compliance and follow procedure for ethanol purchase and use.

Procedures

Tax Free Alcohol (TFA)

TFA refers to ethanol/ethyl alcohol that is 190 proof or higher. It is regulated by the Alcohol and Tobacco Tax and Trade Bureau (TTB). Authorized users include any:

- Scientific university or college of learning
- Educational institution exempt from income tax under section 501(a) of the Internal Revenue Code
- Laboratory for use exclusively in scientific research.

Departments and laboratories that purchase TFA under the University industrial alcohol user permit must meet requirements to maintain this permit. Authorized purchasers are subject to an audit at any time by officials of the TTB.

NOTE: Researchers and other users are urged to substitute reagent grade alcohol where possible to minimize the amount of recordkeeping and liability

Prohibited Use of TFA

- Tax-Free alcohol may not be used for beverage purposes, or in any food product, or in any preparation used in preparing a beverage or a food product.
- Tax-Free alcohol may not be sold.

- Tax-Free alcohol may not be used in the manufacture of any product which will be sold or in any product resulting from the use of tax-free alcohol which will be sold.
- Tax-Free alcohol may not be removed from the premises authorized under the permit.

Purchasing

- Contact WCU Purchasing department to determine which vendor to use for the specific alcohol that is being requested. A purchase requisition will then need to be submitted into SourcePoint/Ariba.
 - The Purchasing Agent:
 - Must include the permit number on the purchasing order.
 - Place the order via the PA Liquor Control Board web site.

Receiving

Ethanol must be received at the time of delivery by the purchaser, or designated receiver for the department.

- Ethanol cannot be transported from one building to another and must be delivered to the exact location in which it will be used and stored. Contact EHS to discuss chemical transport.

Storage

The regulations require the secure storage of tax-free ethanol while unattended or removing an amount from the inventory for use. Secure storage includes:

- Flammable storage cabinet under a fume hood.
- Lockable flammable storage cabinet.
- Locked lab where tax-free ethanol is stored.

Labeling

All reagents and dilutions made from tax-free ethanol should be appropriately and accurately labeled to ensure they are not transported off the premises. See [Chemical Labeling](#) or [EHS webpage](#) for more information.

Inventory and Record Keeping

The regulations require that all persons who obtain tax-free ethanol must maintain an inventory of the tax-free ethanol they have in storage and records of its use, sufficient to identify any lost, stolen or destroyed ethanol. All records must identify tax-free alcohol by proof, date of receipt/usage, and quantity involved. Records shall be kept current at all times **and must be kept for 2 years** Per [40 PA Liquor Code 11.35 Record and Reports](#). Report any discrepancies in the inventory to EHS.

- **Records of receipt:** Consist of the invoice, bill or bill of lading, or another document used for the intended purpose. Records of receipt shall record the proof, date of transaction, and quantity of tax-free alcohol received.
- **Records of usage:** Identify the tax-free ethanol by quantity, proof, and purpose of removal.
- A physical inventory of tax-free ethanol in a labs possession must be taken semi-annually and for periods ending June 30 and December 31 of each year. These inventories may be recorded separately or as an entry in the record of usage with any necessary adjustments (losses or gains).
- [TTB Inventory log \(excel spreadsheet\)](#)

Safe Work Practices

- Do not use open containers of ethanol near open flames and other ignition sources (such as hot plates).
 - Ethanol flaming is a commonly used sterilization procedure, but there are safer ways, such as a glass bead sterilizer. Contact EHS for other alternatives.
- If an open flame or other ignition source is to be used on a surface recently decontaminated with ethanol, be sure that the surface has dried completely.
- Routinely check the cords of equipment throughout the lab, as frayed cords have become points of ignition in the past.
 - Pay particular attention to cords that are low to the ground, even if they are distant from the area ethanol is used. Ethanol vapors are heavier than air and can travel away from their point of origin.
- When using ethanol, avoid using open-top containers and place it in a container that exposes the minimum surface area of ethanol possible.
 - The less surface area exposed, the slower the ethanol will evaporate.
- Avoid using metal containers to store and/or transfer ethanol. If there is no practical alternative, the metal containers must be bonded and grounded. Contact EHS with any questions about bonding and grounding measures.
- Review the safety data sheet (SDS) for the specific brand and type of ethanol your lab uses. Different manufacturers and concentrations can include different additives, which may change the hazard profile.

Engineering Controls

Work with ethanol in a chemical fume hood, especially volumes greater than 500 milliliters.

- Good ventilation removes ethanol vapors, making it less likely that a flammable concentration may build up.

Personal Protective Equipment (PPE)

- Lab appropriate street clothing - long pants and closed-toed shoes.
- Lab coat
- Safety glasses (or goggles/face shield if there is a splash hazard)
- Nitrile gloves
 - If you get ethanol on your gloves, change them promptly. Ethanol breaks through standard nitrile gloves in under an hour. Furthermore, ethanol can carry dissolved materials with it, so consider the compatibility of all materials involved in an experiment during glove selection. Contact EHS for help with PPE selection.

Emergency Procedures

- **Exposure**
 - Skin: Wash ethanol off skin with plenty of soap and water.
 - Eye: Go to an eye wash station and rinse for at least 15 minutes.
- **Spill**
 - Small spill: Wipe up the spill using absorbent pads from a chemical spill kit. Dispose of any contaminated material.
 - Large or health-threatening spill: Warn others, leave the area, and call Public Safety (x3311).
 - See [Chemical Spill Procedures](#) for more information.

- Fire Procedures

- Notify:
 - Other occupants of the immediate space (yell)
 - Other occupants of the facility (use the fire alarm)
 - Emergency responders (Public Safety 610-436-3311)
- Evacuate
 - The immediate area of the problem.
 - The space within which the problem has occurred.
 - The building within which the space is located.
- Isolate and or extinguish.
 - Lower hood sash, close lab door(s), close corridor doors.
 - IF SAFE TO DO SO, attempt to extinguish.

- Fire Extinguishers

- Fire extinguishers are placed in or just outside laboratories depending on the hazards. A dry chemical (ABC) is the typical extinguisher is located in laboratory facilities where flammable liquids are used. Some Laboratories will be equipped with a Carbon Dioxide extinguisher, and these are also rated for flammable liquids. Laboratory Workers should be familiar with the location of fire extinguishers; however, personnel are not required to use fire extinguishers and should only use them if safe. For more information about fire extinguishers or to request training in the use of fire extinguishers, contact the WCU-EHS at 610-436-3333.

Waste Management

ETHANOL CANNOT BE DISPOSED OF DOWN THE DRAIN AT ANY CONCENTRATION. It must be collected and disposed of as hazardous waste. Contact EHS to schedule a waste pickup.

- Intentional dilution or evaporation of ethanol or any other waste as a substitute for proper disposal is illegal.
 - This means that if you dilute a 70% ethanol solution to 20% with water and pour it down the drain, it is still illegal. Likewise, you cannot boil off or evaporate ethanol waste in place of proper disposal.

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