



University of Colorado Denver | Anschutz Medical Campus

Campus Administrative Policy

Policy Title: Flammable / Combustible Liquids Policy and Procedures (OPP: 103-100)

Policy Number: 3076

Functional Area: General Administration

Effective: February 22, 2018

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Supersedes: Flammable / Combustible Liquids (January 1993)

Approved by: David C. Turnquist
Associate Vice Chancellor, Facilities Management
Duxton Milam
Campus Fire Marshal, Facilities Management
Authority Having Jurisdiction for Fire and Life Safety
(February 22, 2018)

Prepared by: Campus Fire Marshal
Reviewing Office: Executive Vice Chancellor for Administration and Finance |
CFO, University of Colorado Anschutz Medical Campus
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CFO, University of Colorado Denver

Responsible Officer: Executive Vice Chancellor for Administration and Finance |
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Applies to: University of Colorado Anschutz Medical Campus
University of Colorado Denver
University of Colorado South Denver Location

A. POLICY STATEMENT

In order to protect the health and safety of University of Colorado Denver | Anschutz Medical Campus research staff, students, and visitors, and in order to minimize institutional risk and potential losses associated with the use of flammable and combustible materials, this policy is mandated. The storage of flammable and combustible liquids in laboratories, and the use of supporting equipment, will comply with the limits and requirements set forth below.

B. PURPOSE

To establish a policy for safe use of flammable and combustible liquids on campus property.

C. DEFINITIONS

Flammable liquids have a flash point of less than 100⁰ F.

Combustible liquids have a flash point at or above 100⁰ F.

Flash point is the temperature at which a material puts off sufficient vapor to ignite in the presence of an ignition source.

(As an example, ethyl alcohol will produce enough vapors to ignite if the temperature of the liquid reaches its flash point of 62⁰ F. or higher. Therefore, at room temperature, ethanol vapors are generated. If the vapors come into contact with an ignition source, a fire or explosion will occur. It should also be noted that combustible liquids, while relatively safer due to the higher flash point, will greatly accelerate a fire. Flammable liquid storage cabinets are designed to prevent the stored contents becoming involved in a fire for only about 5-10 minutes.)

D. PROCEDURES

General Storage Requirements

1. Quantities of flammable and combustible liquids should be kept at a minimum. Holding large stocks of these materials places the laboratory and the institution at higher risk.
2. Flammable storage cabinets cannot be stored in hallways, stairwells, or in the path of egress from a lab.
3. Cabinets must not store:
 - Materials that are incompatible or reactive with flammable/combustible liquids
 - Compressed gas cylinders, lecture bottles, and liquefied petroleum gases (LPG)
 - Flammable solids or pyrophoric materials
 - Any heat-producing material or equipment
4. All containers must be capped, so as to prevent spillage if the container is tipped over. (Secondary containment is suggested when possible.)
5. In single enclosed labs, flammable and combustible liquids (combination) in excess of 10 gallons must be stored in approved flammable storage cabinets.
6. In no case, will an individual lab store more than 120 gallons of flammable and/or combustible liquids (combination), including within a flammable liquid storage cabinet (this includes flammable and combustible waste liquids). Of this, no more than 60 gallons shall be of liquids with a flash point of less than 73⁰ F. Exceptions to this policy will be considered on a case-by-case basis, and both the Environmental Health and Safety Division and the campus Fire & Life Safety Officer must grant approval.

OPEN-FLOOR LABORATORIES

The new research areas on the Anschutz Medical Campus have limits significantly different than what has been allowed in fire-walled closed labs. Researchers should anticipate lower allowable quantities, due to the open-floor laboratory design. The following requirement relates to open labs:

Due to Fire Code requirements, the open-floor laboratories may have a maximum of 480 gallons of flammable liquids per floor.

Each lab module is allowed a maximum of 2 gallons of flammable liquid outside of approved flammable liquid cabinets.

COLD STORAGE OF FLAMMABLE LIQUIDS

In addition to the above Fire Code requirements, the campus Environmental Health and Safety (EHS) Department requires certain “Best Practices” for storage of flammable liquids. Below is a partial listing of those policies.

Flammable liquids cannot be stored in lab refrigerators*, unless:

1. The refrigerator is specifically designated as a flammable materials storage refrigerator which complies with National Fire Protection Association (NFPA) 45, and is Underwriter’s Laboratory (UL) listed, or
2. The refrigerator is specially designed as being an explosion-proof refrigerator and complies with OSHA 29 CFR 1910.307 and is UL listed for Class 1, Groups C and D hazardous locations.
3. Explosion proof refrigerators require inspection and approval from the campus EHS Department or the Campus Fire Marshal.

Flammable liquids cannot be stored or used in cold rooms,* unless:

1. The cold room’s electrical and refrigeration equipment is specially designed as being explosion-proof. The unit must comply with OSHA 29 CFR 1910.307 or UL for Class 1, Groups C and D hazardous locations, and
2. The room must be mechanically ventilated, providing 100% outside air, at an exhaust rate of at least 6 changes per hour at the point of use.
3. These rooms require design approval of EHS, prior to installation or construction.

***EXCEPTION:** A limited risk is associated with the small-quantity cold storage of ethyl, methyl, and isopropyl alcohols. EHS will accept refrigerator or cold-room storage of these materials, provided that the quantity in a container does not exceed 500 ml, AND the liquid is stored in a tightly sealed container with 25% of the bottle empty (for vapor expansion), AND there is sealed secondary containment, using a non-breakable container. (Secondary containment using sealed, hard-sided plastic containers, such as

those found at most grocery stores, is acceptable unless the liquid degrades the container.) Only two containers are allowed per cold-storage area. Transfer of liquid to other containers must take place in a well-ventilated area, away from the cold storage unit. The exception DOES NOT APPLY to ethers or other flammable liquids, unless pre-approved by the Environmental Health and Safety Division. The consideration of other exceptions will be handled on a case-by-case basis, dependent on use, quantity, and safeguards.

For further clarification or assistance, please contact the Campus Fire Marshal at (303) 724-0293, or the Environmental Health and Safety Division at (303) 724-0345.

Notes

1. Dates of official enactment and amendments:
January 1993: Adopted/Approved by Associate Vice Chancellor for Facilities
February 22, 2018: Revised
December 18, 2019: Reformatted
2. History:

December 18, 2019: Reformatted to reflect a Campus-wide effort to recast and revitalize Campus policy sites into a standardized and more coherent set of chaptered policy statement organized around the several operational divisions of the university. Links, university branding, and formatting updated by the Provost's office.
3. Initial Policy Effective Date: January 1993
4. Cross References/Appendix:
 - [2015 ed. International Fire Code](#)
 - [National Fire Protection Association \(NFPA\) Life Safety Code](#)
 - [Campus Policy 3003, Authority Having Jurisdiction for Fire Prevention and Life Safety](#)
 - [Campus Policies and Guidelines Online Library General Administrative Section](#)