
Flammable Liquid Storage

Standard Operating Procedure

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Potential Safety Hazards

Fires and/or Explosions – Improper storage of flammable liquids can result in a fire or explosion. Safe storage of flammable liquids in laboratories requires responsible inventory management, availability of appropriate storage locations, and operating practices that separate flammable liquids from potential ignition sources.

Definitions

Flash Point - The lowest temperature at which a liquid will give off enough vapor to form a flammable mixture in air. A liquid with a lower flash point is more flammable than a liquid with a higher flash point.

Flammable Liquid - The Occupational Health and Safety Administration (OSHA) considers a liquid flammable if the liquid has a flash point below 200 °F.

Flammable Liquid Storage Cabinet – A cabinet designed to protect the contents from a fire on the outside of the cabinet.

Explosion Proof Refrigerator/Freezer – A refrigerator and/or freezer designed to prevent the ignition of flammable vapors that may be present inside. Refrigerators and freezers that are not specifically designed to be explosion proof contain potential ignition sources.

Safe Work Practices

Inventory Management

- Minimize the amount of flammable liquid stored in a laboratory.
 - Acquire only the amount expected to be utilized in the near future.
 - Provide partially used containers of flammable liquids that are no longer needed to co-workers using the same material.
 - Dispose of waste flammable liquids via the Environmental Health & Safety Department (<https://www.isu.edu/ehs/>).
- Substitute flammable liquids with less flammable liquids if possible.
- Dispose of waste flammable liquids in a timely manner.

Storage Locations

- Ensure no more than 5 gallons of flammable liquid is stored in a laboratory unless the liquid is stored in flammable liquid storage cabinet. If there is flammable liquid stored inside and outside a flammable liquid cabinet, no more than 5 gallons is allowed outside the cabinet.
- Prohibit refrigerator/freezer storage of flammable liquid unless the refrigerator/freezer is specifically designed to be explosion proof.
- Choose flammable liquid storage locations that are not near potential ignition sources such as open flame, spark producing equipment, and heat producing equipment.
- Consider storing flammable liquids in secondary containment to minimize potential spills.

Operating Practices

- Prohibit hot work operations (grinding, welding, torch cutting, soldering, etc...) near flammable liquids.
- Conduct lab operations that generate heat a safe distance from flammable liquids.

Preparedness for a Flammable Liquid Spill

Spill Awareness

- Recognize conditions that may indicate a flammable liquid spill has occurred.
 - visual evidence of a spill, or
 - an unusual odor.

Planning for a Potential Spill

- Be aware that a flammable liquid spill can become catastrophic if the flammable liquid or vapor from the flammable liquid reaches an ignition source.
- Understand the hazards associated with the flammable liquids stored in the laboratory. Reference the corresponding Safety Data Sheets (SDS) for details.
- Determine the existing response capabilities and limitations of persons in the work area. Utilize this information to plan for potential spills.
- Acquire appropriate spill response materials for the types and amounts of flammable liquid spills that could occur.
- Ensure persons working in the laboratory are aware of the established flammable liquid spill response procedures.

References

29 Code of Federal Regulations 1910.106 (OSHA Flammable Liquid Rules)
NFPA 30 (Flammable and Combustible Liquids Code)
UL 1203 (Explosion Proof Standards for Hazardous Locations)