

University of Delaware

Fire / Safety Training

Laboratory Occupancies



UD-Goal

**No Loss of life, No injury,
No damage to facilities.**

UD Policy 7-6

Common Fire Safety Features @ UD

- Smoke detectors
- Fire rated barriers
- Emergency Evacuation Systems
- Automatic Sprinkler System
- Emergency Blue Light Phones
- Enhanced 911 Call system
- Portable fire extinguishers



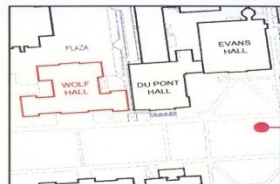
Laboratory Fire Prevention

- Keep flammable and combustible liquids in cabinets or hoods when not in-use
- Do not use flammable and combustible liquids in areas where ignition sources are close by
- Dispose of rags or other materials soaked with flammable or combustible liquids in a metal container with self-closing lid

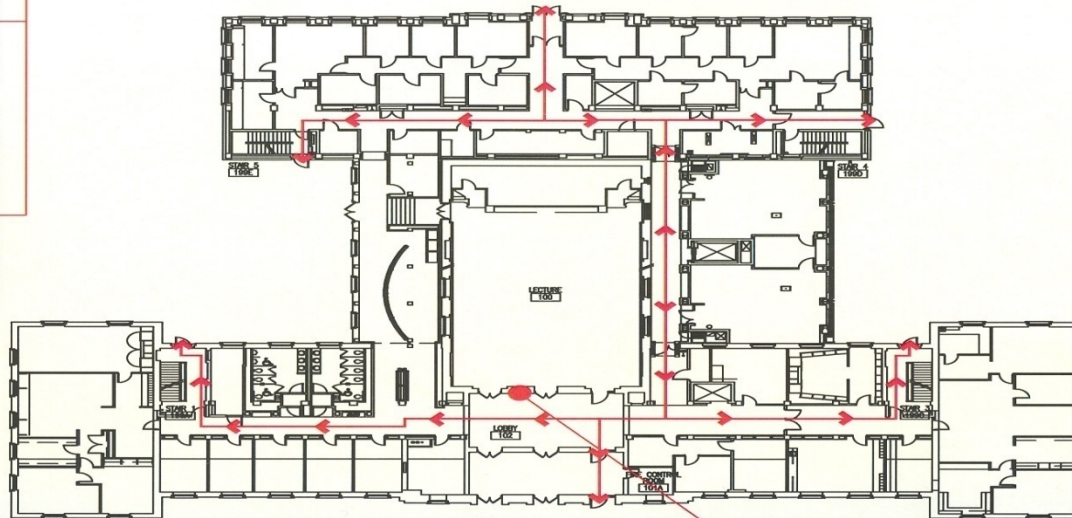
Laboratory Fire Reaction

- Emergency Planning for Experiments
- Shutdown of Lab Gases
- Securing Lab Hoods
- Leave Ventilation Running
- Close door to lab upon departure
- Advise Public Safety Officer if procedures not completed (provide room/lab number)

Evacuation Plans



 EMERGENCY GATHERING POINT - 200'



 ADA ACCESS

YOU ARE HERE

U
D WOLF HALL FIRST FLOOR
105 Central Mall
Newark, DE

 EMERGENCY GATHERING POINT - 200' →

C100C

DATE: 01/07/03
SCALE: N.T.S.

Spring 2007 Incident

- Lab Hood Fire
 - Ignition Source = Heat Gun
 - Fuel = Hexane
 - Factors
 - Beaker not secure
 - Procedure Protocol not specific
 - Additional training recommended



Lab Fire Incident

- Lessons Learned
 - T/A's act as lab supervisors
 - More focus needed to ensure procedures incorporate fire safety
 - Encourage fire extinguisher familiarization and training



Chemical Reaction Fire

- Student was cleaning up the bench tops using paper towels and some acetone and threw the paper towels in the chemical trash.
- Later on I was cutting sodium metal. After cutting there is usually trace amounts of sodium left on the spatulas and weighing paper which is quenched with a small amount of water.
- Before being there was a small piece of sodium that he missed and upon wiping it up and tossing it out the sodium reacted with the water in tossed in the trash
- This time I assume the presence of the solvents and it started smoking. I quickly noticed that and used the fire extinguisher.



2009 Fire Incident

- 221 LDL
 - Solid Waste Box by Fume Hood Fire
 - unquenched pyrophoric material reacted with air and combustible waste



Lab Fire Safety

- Fire Prevention
 - Work safely!
- Electrical Safety: Frayed and cracked cords, overloaded plugs and circuits, extension cord use.
- Do not block exits, fire extinguishers, fire alarms
- Fire Extinguishers should be mounted
- Keep combustibles from heat sources

Fire Prevention

- Store chemicals and flammable liquids properly
- Secure gas cylinders
- Work safely with chemicals
- Know your emergency procedures
- Do not prop open fire doors!
- Keep Path of Egress free of Obstructions

Fire Alarm Notification Devices

Please Safely Leave the Building when Activated



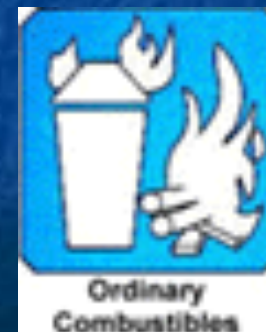
Enhanced 911 Call System

- **A university wide system designed to provide quick communications with emergency responders – all calls terminate at UD Police Headquarters on Academy Street. Calls made via 911 system automatically alert dispatcher to location of calling phone.**



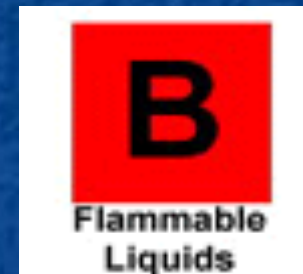
Types of Fire Extinguishers

- **Class A Extinguishers** will put out fires in ordinary combustibles, such as wood and paper. The numerical rating for this class of fire extinguisher refers to the amount of water the fire extinguisher holds and the amount of fire it will extinguish.



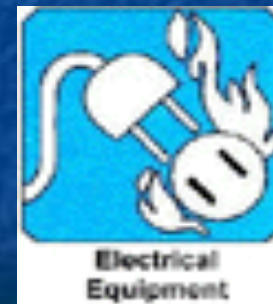
Types of Fire Extinguishers

- **Class B Extinguishers** should be used on fires involving combustible/flammable liquids, such as grease, gasoline, oil, etc. The numerical rating for this class of fire extinguisher states the approximate number of square feet of a flammable liquid fire that a non-expert person can expect to extinguish.



Types of Fire Extinguishers

- **Class C Extinguishers** are suitable for use on electrically energized fires. This class of fire extinguishers does not have a numerical rating. The presence of the letter “C” indicates that the extinguishing agent is non-conductive.



Types of Fire Extinguishers

- **Class D Extinguishers** are designed for use on flammable metals and are often specific for the type of metal in question. There is no picture designator for Class D extinguishers. These extinguishers generally have no rating nor are they given a multi-purpose rating for use on other types of fires.



Combination Fire Extinguishers

- Can be used on multiple types of fires.
- Usually are CO₂ or Dry Chemical.



ABC Dry Chemical is Most Common in UD Facilities



Personal Safety

- **NEVER** reach into a fire to attempt to extinguish it. If you can not safely operate the fire extinguisher you are using...
 - **Leave area of fire and CLOSE the door**
 - **Leave the building immediately**
 - **Pull the building's manual pull station on your way out the door, if the buildings evacuation alarm is not already sounding**

Operating a Fire Extinguisher

- Pull pin
- Aim at the base of the fire
- Squeeze the top handle down
- Sweep back and forth until the fire is out or container is empty

BullEx Intelligent Fire Training System

- BullEx Intelligent Fire Training System
- The on-board microprocessor control system determines exactly where the user is aiming and sweeping. Variable electronic valves constantly adjust the amount of propane sent to the burners to simulate the fire's response to the extinguisher.



BulEx Intelligent Fire Training System

- If the trainee aims at the base of the fire, and sweeps the training extinguisher properly, the flames gradually go out.
- If the trainee does not sweep properly the flames will continue to grow.
- If the trainee does not sweep all the way across the base of the fire, the flames will not go out. Only the areas of the fire that were hit with the training extinguisher will be extinguished



BullEx Intelligent Fire Training System

- Training extinguishers are similar in appearance to water fire extinguisher
- Each unit provides up to 5 evolutions (re-pressurize after each use)



Extinguisher Pad Safety

- Stay within the training area/be watchful of traffic
- Upon PASS with Extinguisher, Don't turn your back on the fire