WSU-TFREC
Fire Safety Training
WSU-TFREC

• Locate the nearest exits, alarms and fire extinguishers to your work area

• Floor plans are available online:
  ▪ Overley Building
    http://www.tfrec.wsu.edu/pages/safety/Overley_Building_Floor_Plan
  ▪ Entomology Building
    http://www.tfrec.wsu.edu/pages/safety/Entomology_Building_Floor_Plan
  ▪ Soils Building/Greenhouses
    http://www.tfrec.wsu.edu/pages/safety/Soils_Building_Greenhouses_Floor_Plan
  ▪ Insect Ecology Lab (Annex)
Fire Hazards

• Fire hazards at WSU-TFREC include:
  ▪ Open flame
  ▪ Electricity
  ▪ Chemicals
  ▪ Flammable/combustible materials
  ▪ Compressed gases
  ▪ Smoking

• Your supervisors will inform you of the specific fire hazards in your work area
Fire Alarms

• Fire alarms are located:
  - Overely Building (all exits)
  - Insect Ecology Lab (all exits)

• There are no fire alarms in the Entomology or Soils lab—in case of fire, coworkers should be notified verbally
Four Elements of Fire

• Four elements must be present for a fire to occur:
  • Heat
  • Fuel
  • Oxygen
  • Chemical chain reaction between heat, fuel and oxygen
Chemistry of Fire

• A fire occurs when heat is applied to a fuel source in the presence of oxygen.

• When sufficient heat is applied to the fuel, a chemical reaction occurs, causing additional heat to be given off and the fuel to be consumed.
Chemistry of Fire

- All fires are dangerous and even small fires can quickly turn to disasters if employees do not know how to respond

- In the workplace there are dozens of ways fires can start, including:
  - Chemical
  - Electricity and flammable liquids
  - Compressed gases
  - Poor housekeeping
Fire Hazards

• Hazards from fire include:
  ▪ Flames and heat
  ▪ Burns
  ▪ Release of toxic vapors
  ▪ Explosions
  ▪ Suffocation
Fire Classifications

• Fires are classified into four categories depending on the type of material involved

• The type of fire determines the type of extinguisher used to extinguish it
Fire Classifications

- Class A = Paper, cloth and wood
- Class B = Gas, liquid and grease
- Class C = Electrical
- Class D = Metal (sodium, potassium, magnesium)

![Fire Classification Diagrams]

- Ordinary Combustible
- Flammable Liquids
- Electrical Equipment
- Combustible Metals
Fire Prevention

• Fires can be prevented

• Basic rules of fire prevention include:
  ▪ Eliminating fire hazards
  ▪ Knowing how to respond if a fire breaks out
**Fire Prevention: Electrical**

- To prevent electrical fires
  - Do not overload circuits
  - Do not use damaged cords (especially on power tools)
Fire Prevention: Chemical

• **Before** using chemicals, read the MSDS to determine:
  - The flash point
  - Flammability
  - Reactivity
  - Whether the chemical is a fire hazard

• **While** using chemicals:
  - Provide adequate ventilation
  - Keep combustibles away from heat sources to prevent chemical fires
Fire Prevention: Flammable/Combustible

• When working with flammable and combustible liquids such as gasoline or solvents:
  ▪ Keep liquids away from ignition sources
  ▪ Store liquids in closed containers
  ▪ Limit the amount of flammable materials used at any one time
Fire Prevention: Compressed Gases

• When working with compressed gasses:
  ▪ Handle cylinders containing flammable liquids with extreme caution
  ▪ Keep cylinders away from heat
  ▪ Chain cylinders to the wall
Fire Prevention: Housekeeping

• Good housekeeping will prevent fires:
  ▪ **Never** block fire exits
  ▪ Clean up flammables and combustibles
  ▪ Dispose of solvent soaked rags in an airtight container
Fire Prevention: Smoking

- Smoking can be a fire hazard:
  - Obey “No Smoking” signs
  - Don’t smoke near flammable or combustible materials
  - Never leave a lit cigarette unattended
Fire Prevention:
Space Heaters

- Space heaters can be fire hazards:
  - Use only approved space heaters (SPPM 8.50)
  - Keep space heaters away from combustibles
  - Use space heaters in accordance w/manufacturer’s directions
Fire Response

• Even a small fire can lead to a serious emergency
• Take fire drills seriously
• Know your escape routes from all workstations
• If you spot a fire, sound the alarm
Fire Response

• If you hear a fire alarm:
  ▪ Alert co-workers
  ▪ Turn off machinery
  ▪ Close all office and lab doors (do not lock)
  ▪ Leave by the nearest exit
  ▪ Meet at the flagpole (west side of TFREC near the USDA)
If You Spot a Fire

1. Sound the alarm
2. Alert your co-workers
3. Turn off machinery
4. Close all lab and office doors
5. Exit the building
6. Notify the fire department
7. Head to the flagpole
In Case of Fire

• Fight a fire ONLY if:
  ▪ The fire department has been notified of the fire
  ▪ The fire is small and confined to the area of origin
  ▪ You have a way out and can fight the fire with your back to the exit
  ▪ You are trained and confident about using a fire extinguisher
Fire Extinguishers

Fire extinguisher classification markings are located on the front of the fire extinguisher, either above or below the nameplate.
Fire Extinguishers

• Portable fire extinguishers are provided in work areas based on the anticipated fire hazard.

• Read the labels of the fire extinguishers in your area to determine the type of fire it can extinguish.

• Using the wrong fire extinguisher can make the fire worse.
Using a Fire Extinguisher

PASS

Pull the pin

Aim at the base of the fire

Squeeze the handle

Sweep from side to side

Know how to use a fire extinguisher
Follow the *PASS* word
*Pull* *Aim* *Squeeze* *Sweep*
Extinguisher Types: Water

• Water extinguishers are designed for Class A (wood, paper, cloth) fires only

• Disadvantages include:
  ▪ Potential to conduct electricity
  ▪ Spreading Class B fires
  ▪ Freezing in cold climates
  ▪ Carrying pollutants in run-off water
Extinguisher Types: CO$_2$

- Carbon dioxide extinguishers are designed for liquid Class B and electrical Class C fires only.
- You can recognize a CO$_2$ extinguisher by its large wide nozzle and lack of a pressure gauge.
- CO$_2$ extinguishers are frequently located in laboratories, mechanical rooms and near flammable liquid storage.
Extinguisher Types: Dry Chemical

- Dry chemical extinguishers are filled with a fine powder that stops the chemical reaction and reduces the available air.
- Nitrogen is used to pressurize ABC extinguishers ranging from 5 to 20 pounds.
- Most of the fire extinguishers at TFREC are dry chemical.
For a Small Fire

• If you are not sure of your ability to fight the fire

  OR

• If you are not sure of the fire extinguisher’s capacity to contain the fire

Exit the Building

Do NOT Fight a Large Fire
Gas Fires

• Do not attempt to extinguish a gas fire (including gas cylinders) until the gas is shut off.

• If you extinguish a gas fire before the source is shut off, gas can accumulate in the area and create an explosion hazard.
Oil Fires

• Use dry chemical or carbon dioxide to extinguish an oil fire
• $\text{CO}_2$ gas deprives the fire (and potentially you) of oxygen
• After the fire is out, it is important to remove the $\text{CO}_2$ from the air
• Do not return to the area until it has been ventilated
Fire Response

• If your clothing catches fire:
  ▪ Stop
  ▪ Drop
  ▪ Roll
Summary

• Review the floor plan for your building to locate fire extinguishers
• Certain fire extinguishers are used for specific types of fires
• Remember PASS (Pull, Aim, Squeeze and Sweep)
• In the event of fire, your first response is to sound the alarm