

Fire Safety Guidelines



Respond

Prevent

Prepare

IOWA STATE UNIVERSITY

Environmental Health and Safety

2809 Daley Drive | Ames, Iowa 50011

(515) 294-5359 | www.ehs.iastate.edu

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Fire Safety Guidelines

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Fire Safety Guidelines

IOWA STATE UNIVERSITY

Environmental Health and Safety Statement

Iowa State University strives to be a model for environmental, health and safety excellence in teaching, research, extension, and the management of its facilities. In pursuit of this goal, appropriate policies and procedures must be developed and followed to ensure this community operates in an environment free from recognized hazards. Faculty, staff and students are responsible for compliance with established policies and are encouraged to enculturate practices that ensure safety, protect health and minimize the institution's impact on the environment.

As an institution of higher learning, Iowa State University

- fosters an understanding of and a responsibility for the environment;
- encourages individuals to be knowledgeable about environmental, health and safety issues that affect their discipline;
- shares examples of superior environmental health and safety performance with peer institutions, the State of Iowa and the local community.

As a responsible steward of facilities and the environment, Iowa State University

- strives to provide and maintain safe working environments that minimize the risk of injury or illness to employees, students and the public;
- continuously improves operations, with the goal of meeting or exceeding required and applicable environmental, health and safety regulations, rules, policies, or voluntary standards;
- employs innovative strategies of waste minimization and pollution prevention to reduce the use of toxic substances, promote reuse, and encourage the purchase of renewable, recyclable and recycled materials.

The intent of this statement is to promote environmental stewardship, protect health, and encourage safe work practices within the Iowa State University community. The cooperative efforts of the campus community to remain mindful of these goals will ensure that Iowa State University continues to be a great place to live, work and learn.



Dr. Steven Leath
President

Fire Safety Guidelines

Directory of Service and Emergency Providers

Services

Environmental Health and Safety

2809 Daley Drive | (515) 294-5359

Iowa State University Occupational Medicine Department

G11 TASF | (515) 294-2056

McFarland Clinic PC, Occupational Medicine

1018 Duff Avenue | (515) 239-4496

Office of Risk Management

3618 Administrative Services Building | (515) 294-7711

Thielen Student Health Center

Sheldon and Union Drive | (515) 294-5801

Emergency

Emergency – Ambulance, Fire, Police

911

Department of Public Safety / Iowa State University Police

Armory | (515) 294-4428

Mary Greeley Medical Center

1111 Duff Avenue | (515) 239-2011

Fire Safety Guidelines

Introduction



ISU has over 6500 fire extinguishers!

The best defense against a fire is **prevention**.

Fire Safety Guidelines

The mission of the Environmental Health and Safety (EH&S) fire safety program is to protect the lives and property of Iowa State University (ISU) students, faculty, staff and visitors. Our proactive fire prevention program is founded on education, facility oversight and incident investigation.

EH&S provides multiple resources to the ISU community to help fulfill our mission, including

- On-line and classroom fire safety training
- Building plan review
- Inspections of campus spaces for unsafe locations, structures and equipment
- Investigation of campus fires and identification of fire safety improvements
- Inspection and maintenance of campus fire extinguishers

Prevention is the best defense against fire. We are all responsible for fire prevention, and each of us must know how to react in a fire emergency in order to protect ourselves and assist others. These guidelines provide critical information to help keep you and your community safe.

Fire Safety Guidelines

Respond

In the event of a fire

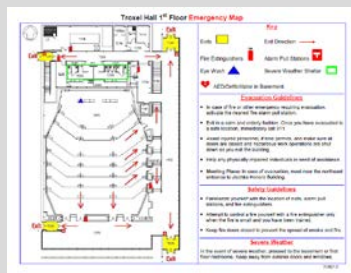
- ✓ Sound the alarm
- ✓ Call 911
- ✓ Respond
- ✓ Exit the building



Do not use elevator.

Attempt to use a fire extinguisher only if

- ✓ it is safe to do so,
- ✓ the fire is small, and
- ✓ you are trained.



Emergency Map

Emergency Actions

Fire and evacuation alarms alert building occupants to life-threatening situations. **LEAVE THE BUILDING IMMEDIATELY IF THERE IS A FIRE OR CHEMICAL ALARM!**

In the event of a fire . . .

Sound the alarm – If a fire has started, no matter how small, activate the alarm system using a fire alarm pull station to alert building occupants.

Call 911 – Notify responders. The building alarm should initiate a response, but calling 911 will inform responders there is an actual emergency. You will also be able to provide critical information. Rapid response minimizes loss of life and property.

Respond – ONLY IF IT IS SAFE TO DO SO!

- Extinguish a fire if you have been trained, the fire is small, and you have a safe exit route. However, you are not required to do this – it is always OK to get out.
- Shut down hazardous operations such as stills, lab equipment, etc.
- Close or shut off fume hoods.

Exit the building – Leave immediately by the shortest and safest exit route. **DO NOT TAKE THE ELEVATOR!**

- [Refer to your Emergency Map](#) for the nearest exit.
- Assist injured or impaired persons if you are able.
- Close doors behind you.
- Stay low if you encounter smoke.
- Proceed to your Designated Meeting Place.
- Do not re-enter the building until the fire department has cleared the building for re-entry, even if the alarms have been silenced.

Designated Meeting Place – Gather and stay at your designated safe location. Notify supervisors and responders of

- Injured or disabled persons.
- Missing or unaccounted-for personnel. Provide their last known location or places they might be working.
- Hazardous operations or areas in the building.

Fire Safety Guidelines

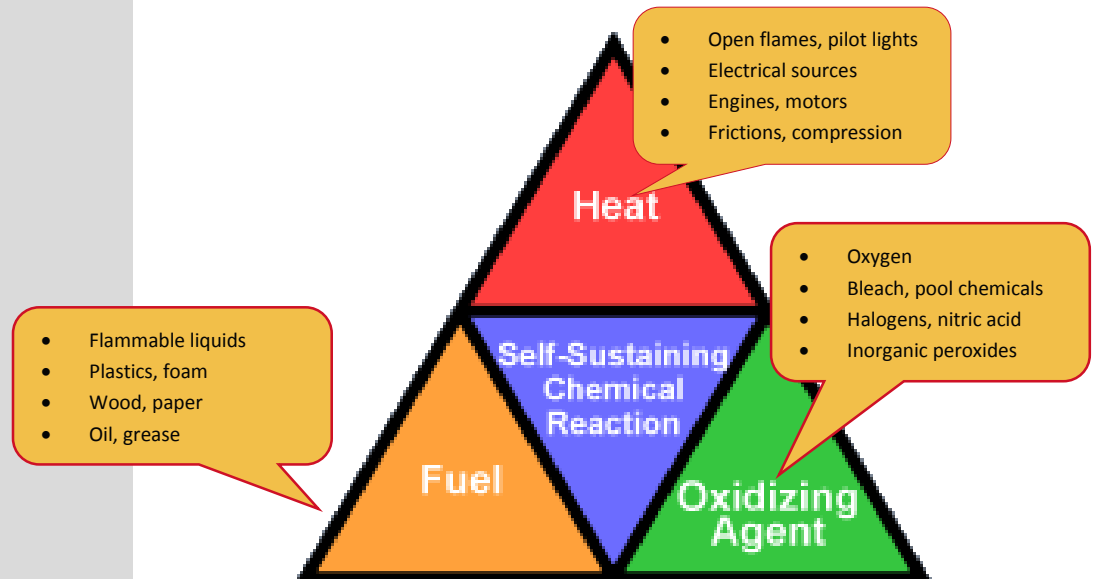
Prevent

Elements of Combustion

- Oxygen
- Fuel
- Heat
- Chemical reaction

Prevention of fires in the workplace is the responsibility of all faculty, students and staff at Iowa State University. Although EH&S, Facilities Planning and Management (FP&M), and other agencies regularly inspect Iowa State University for fire safety, individuals and departments are better suited for identifying and mitigating potential fire hazards in day-to-day operations.

Basic fire prevention involves separating the elements that contribute to combustion. **Fuel, heat, and an oxidizer** (typically oxygen in air) combine to create a sustained combustion **chemical reaction**. Together, these four elements are represented by the fire tetrahedron. Below are some examples of each.



Remember to keep storage of fuel and oxidizers to a minimum and away from the other elements. Always monitor operations to avoid excessive heat.

Fire Safety Guidelines

Flammable and Combustible Materials

Ignitable liquids generate vapors that burn. Vapors may travel significant distances before reaching a heat source or build up in an enclosed space and cause an explosion. Minimizing the amount of fuel in your areas and properly storing materials you have, are two important ways of preventing fires.

Ignitable liquids are designated as flammable or combustible, depending on flash point and boiling point. Flammable and combustible materials are further designated as Class I or Class II. This is important, as different storage rules apply to each class.

Flash Point – The lowest temperature at which a material can vaporize to form an ignitable mixture in air.

Boiling Point – The temperature at which a given material changes from liquid to gas.

Flammable and Combustible Liquid Definitions

Class	Flash Point	Boiling Point
Class IA flammable liquid	below 73°F (23°C)	below 100° F (37.8°C)
Class IB flammable liquid	below 73°F (23°C)	greater than or equal to 100° F (37.8°C)
Class IC flammable liquid	at or above 73°F (23°C)	below 100° F (37.8°C)
Class II combustible liquid	greater than or equal to 100°F (37.8°C) and below 140°F (60°C)	
Class IIA combustible liquid	greater than or equal to 140°F (60°C) and below 200°F (93.3°C)	
Class IIIA combustible liquid	equal to or greater than 200°F (93.3°C)	

Fire Safety Guidelines



Approved Safety Can

All flammable and combustible liquids must be stored in approved, sealed containers. Approved containers include the original (factory) container or designated safety can.



Flammable Storage Cabinet

A maximum of 10 gallons (40 liters) of Class I flammable liquid may be stored in a room outside of a flammable storage cabinet. Additional flammable liquids must be kept in an approved cabinet.

For more information, please see the [Use and Storage of Flammable and Combustible Liquids](#) page on the EH&S website.

Combustible metals require special precautions. Please contact [EH&S](#) at (515) 294-5359 for guidance if you are using combustible metals.

Electrical Safety

Electrical sources are common causes of fires, shocks, and burns. Improperly maintained or operated electrical equipment may short, arc, or overheat, creating an ignition point.

Extension Cords, Outlets, and Surge Protectors

Extension Cords

- Inspect regularly
- Discard damaged cords
- Temporary use only (three days or less)



Do not overload power outlets. Outlet splitters are not permitted.

Surge protectors and extension cords must be UL listed.

Extension cords must have three prongs and match equipment size.

Surge Protectors must never be daisy chained.

Fire Safety Guidelines



Approved Space Heater

Spaces Heaters

1. Space heaters with open elements are not allowed on campus.
2. The only UL listed space heater certified for use at ISU is available through Central Stores. It is listed on the [Central Stores](#) catalog as HEATER, UNDER DESK PANEL.



Do not block electrical panels.

Building Electrical

1. Electrical panels in hallways and occupied rooms **MUST NOT** be blocked.
2. Mechanical Rooms **CANNOT** be used for general storage.
3. Only certified licensed electricians are allowed to do electrical work in any ISU facility. Contact Facilities Planning and Management, [FP&M](#), to schedule work.

Candles and Open Flames

Candles are a common cause of accidental fires and are not allowed without prior approval.

Open flames, whether in a laboratory, kitchen or shop area, must always be attended and kept away from combustible and flammable materials.

Approval from EH&S must be obtained whenever working with open flames outside of designated laboratories, kitchens or shop areas.

See the [Iowa State University Candles and Open Flames Policy](#) for more information.

Fire Safety Guidelines

Fireworks, Pyrotechnics, and Flame Effects

The use of fireworks, pyrotechnics and flame effects is prohibited on campus unless approved as specified in the Iowa State University [Fireworks, Pyrotechnics and Flame Effects Policy](#).

Smoking

The ISU campus was designated smoke-free on July 1, 2008. For more information, see the [Iowa State University Smoke-Free Campus Policy](#).



Arson fires do not have to be intentional: the illegal use of fireworks is considered to be arson.

Arson

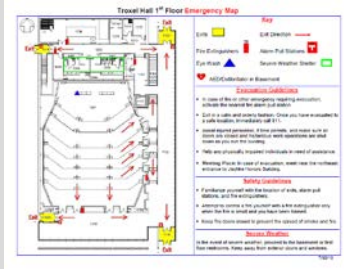
Arson is one of the leading causes of fire. Arson is defined as the malicious burning of another's house or property, or in some statutes, the burning of one's own house or property, to collect insurance.

You can prevent arson by

- Reducing easy access to supplies of fuel for fires.
- Maintaining proper housekeeping.
- Emphasizing security measures / following building security measures.
- Keeping unauthorized persons out of offices, laboratories, or other work areas.

Fire Safety Guidelines

Prepare



Emergency Map



Keep stairwells clear for easy exit during a fire.

Plan Ahead

Practice what to do in an emergency before one happens. Fire drills should be scheduled to help people prepare for an evacuation.

- Know where the nearest fire extinguisher is located and learn how to use it.
- Know where the nearest fire alarm pull station is located.
- Know the proper evacuation methods for disabled persons.
- Know primary and secondary evacuation routes, as well as the location of a safe meeting place by referring to the [Emergency Maps](#) for your building.

Evacuation Routes

Exiting from a building in an emergency is critical. All academic and residential buildings on campus have at least two exits. Planning prior to an emergency should be done so that no time is lost when evacuation is required. The following are critical components for safe exiting:

- Know all exits from the building – in an emergency an exit may be blocked and not allow passage. You may be forced to use an alternate exit.
- Keep corridors free from obstructions. Storage is not allowed in corridors. Materials can restrict exit width and be fuel for a fire.
- Keep stairwells clear – nothing is allowed to be stored in a stairwell.

Hazardous Chemical Labeling and Inventory

It is critical that responders are able to identify hazardous chemicals in rooms or buildings. Ensure that all chemical containers are labeled and a [current inventory has been submitted](#) to EH&S.

Fire Safety Guidelines

Fire Doors and Wedges

Most buildings at Iowa State University have a number of fire doors to resist the spread of flames and smoke. If used properly, fire doors contain fires and protect exit passages. Fire doors can be identified by a rating plate or the presence of a closing device.



Magnetic Hold-Open Device



Do not use door wedges!

- A fire door can be held open with an approved door mechanism that will automatically close the door in the event of a fire.
- Never place objects in the swing of a fire door.
- Even non-fire-rated doors can help stop the spread of fire and smoke. Close them when leaving at the end of the day, or when evacuating from a fire.
- Do not disable the closing device on any door.
- Do not hold a fire door open with a wedge, wire, string, or other unapproved methods.
- A chair can be used to hold open an office door, but should be closed when leaving the office.
- Do not panic if fire doors close when an alarm goes off. This is normal and you can still exit through these doors, if they are designated emergency exit routes.

Sprinkler Systems

Sprinkler systems are an effective method for extinguishing fires before they grow out of control. It takes as little as 155° to activate a sprinkler and release pressurized water. Only the sprinklers that are directly contacted by high heat from a fire will activate, open, and shower the fire with cooling water. To be effective, the heads must remain undamaged and unobstructed. You can help ensure system operation in the following ways:

Learn to identify sprinkler heads

- Not all sprinkler heads look alike.
- Learn where the sprinkler heads are in your area.
- Contact FP&M or Department of Residence (DOR) (depending on location) if you see a damaged or leaking sprinkler head.



Pendant Sprinkler



Sidewall Sprinkler

Fire Safety Guidelines



Upright Sprinkler

Protect Sprinkler Heads

- Do not hang anything on the sprinkler heads or piping. This could cause them to fail in a fire or break, causing undesired flooding.
- Do not block the path of the pre-designed sprinkler spray pattern. Keep all items at least 18 inches below the bottom of all sprinkler heads.



Fire Department Connection

Fire Department Connections

Fire department connections (FDC's) connect the fire truck to the building's sprinkler or standpipe system in order to supply fire suppression water to the building. Tampering or blocking a FDC is illegal.



Fire Alarm Pull Station

Fire Alarm Systems

Every occupied structure at Iowa State has a fire alarm in accordance with code. These systems are inspected, tested, and maintained by trained staff at FP&M and DOR. For problems with fire alarm systems in DOR-controlled buildings, call (515) 294-3322; for all other buildings, call FP&M (515) 294-5100.

- Never remove a smoke detector to stop or prevent a nuisance alarm (e.g. from cooking). Use proper ventilation and take care while cooking to prevent nuisance alarms.
- **Take every alarm seriously and follow evacuation procedures and audible instructions.**

Fire Safety Guidelines

Fire Extinguishers

TYPES OF FIRES	
CLASS A	ORDINARY COMBUSTIBLES: wood, paper, rubber, fabrics and many plastics
CLASS B	FLAMMABLE LIQUIDS & GASES: gasoline, oils, paint, lacquer and tar
CLASS C	FIRES INVOLVING LIVE ELECTRICAL EQUIPMENT
CLASS D	COMBUSTIBLE METALS OR COMBUSTIBLE METAL ALLOYS (NO picture symbol)
CLASS K	FIRES IN COOKING APPLIANCES THAT INVOLVE COMBUSTIBLE COOKING MEDIA vegetable or animal oils and fats

Types of Fire Extinguishers

Remember:

- **P**ull
- **A**im
- **S**queeze
- **S**weep



Fire extinguishers at Iowa State meet regulatory requirements and allow trained employees to attempt to extinguish small fires. EH&S offers hands-on and online training courses covering all aspects of fire extinguisher use. Fire extinguisher training is required for all university staff on an annual basis.

EH&S installs, maintains, and inspects all fire extinguishers on campus. [Correct fire extinguishers](#) have been installed based on the hazards in each area. Any extinguisher found to be faulty, discharged, or missing must be reported to EH&S by calling (515) 294-5359 or email ehsinfo@iastate.edu.

Only attempt to use an extinguisher if

- You have been trained.
- The fire alarm has been activated and 911 called.
- The fire is small and there is a very low amount of smoke.
- You have an exit.

Use the **P.A.S.S.** Method

Pull the pin: *Use a twisting motion to break the tamper seal, don't squeeze the handle yet*

Aim nozzle at the base of the fire: *Aim low, don't aim up at the flames.*

Squeeze the handle: *Make sure the handle is fully depressed.*

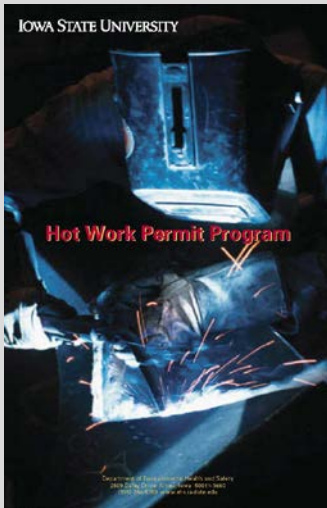
Sweep side to side: *Start at the front of the fire and sweep side to side towards the back.*

Remember...time is always of the essence because fire extinguishers have a limited operation time of 8-15 seconds. Fire extinguishers can save lives and property when used on small fires...but only if they are used properly.

See the [Iowa State University Fire Extinguishers Policy](#) for more information.

Fire Safety Guidelines

Hot Work Program



[Hot Work Permit Program Manual](#)

The Iowa State University Hot Work Permit Program has been developed to ensure compliance with applicable Occupational Health and Safety Administration (OSHA) and National Fire Protection Association codes. Hot work operations include, but are not limited to, welding, brazing, torch cutting, and torch soldering. Hot work presents serious fire hazards that ignite thousands of unintentional fires every year.

Departments performing hot work activities must designate Permit Authorizing Individuals who will inspect hot work areas for compliance in accordance with the program and issue hot work permits. Employees are responsible for obtaining hot work permits whenever hot work is performed outside of designated hot work areas which have been approved by Environmental Health and Safety.

Additional information is available on the EH&S [Hot Work Permit Program webpage](#).

Fire Safety Guidelines

University Non-discrimination Statement

Iowa State University does not discriminate on the basis of race, color, age, ethnicity, religion, national origin, pregnancy, sexual orientation, gender identity, genetic information, sex, marital status, disability, or status as a U.S. veteran. Inquiries regarding non-discrimination policies may be directed to Robinette Kelley, Director, Office of Equal Opportunity, Title IX/ADA Coordinator, and Affirmative Action Officer, 3350 Beardshear Hall, Ames, Iowa 50011, Tel. 515 294-7612, email eooffice@iastate.edu.