MONTANA
TECHNOLOGICAL UNIVERSITY

Fire Protection and Prevention Plan

I. Purpose

The Montana Tech Fire Protection and Prevention Plan is to provide faculty, staff and students with information and guidelines to recognize, report and control fire hazards in accordance with Occupational Safety and Health Administration (OSHA) 29 Code of Federal Regulations (CFR) 1910.38.

II. Responsibilities

Deans, Department Heads, Directors, and Program Managers

- **Evacuate the building with sound of fire alarm and/or with verbal command(s)**
- Ensure faculty, staff, and students are trained on procedures, evacuation routes and assembly areas.
- Ensure fire doors are closed at all times unless on a magnetic system.
- Closely monitor the use and storage of flammable materials in the department.
- Ensure flammable materials storage areas are properly maintained.

Physical Facilities Director

- Ensure fire suppression systems are inspected and maintained.
- Ensure fire alarm systems are inspected and maintained.
- Ensure exit signs and emergency lights are periodically inspected and operating properly.
- Ensure fire extinguishers are inspected monthly by visual inspection and annually by a certified inspector.

Montana Tech Employees and Students

- **Evacuate the building with sound of fire alarm and/or with verbal command(s)**
- Use, store, and transfer flammable materials in accordance with provided training.

- Control accumulation of flammable and combustible materials in offices, labs and storage areas through proper housekeeping.
- Know how to report fires, hazardous chemical spills and other emergencies.
- Know evacuation routes, assembly areas, and procedures.

III. Potential Fire Hazards

See Appendix A for the most common causes of fire and their associated hazard prevention methods.

IV. Notification and Evacuation Procedures

In the event of a fire, explosion, or other emergency, call 911 from a safe location. Evacuate the building if necessary by pulling the fire alarm, and call Campus Security at 406-496-4357 (HELP) or 4357 from a campus phone. Security will contact those on campus that should be notified.

All occupants must evacuate a building when designated to, and must proceed to the assigned assembly area for the building. Reference the Emergency Action and Crisis Protocol Manual.

V. Fire Extinguishing Systems

Portable fire extinguishers are located in every building on campus. Most extinguishers are Class ABC. Some computer areas have Class BC with carbon dioxide. The kitchen areas are equipped with built-in fire suppression systems.

- Refer to Appendix B for procedures on how to use a fire extinguisher (only provided for awareness training.)
- Refer to Appendix C for a fire extinguisher selection guide.

Automatic fire sprinkler systems must be properly maintained according to the manufacturers' recommendations. Refer to Appendix D for the requirements.

VI. Maintenance

If an extinguisher needs service, it is sent to a contractor for repair or refilling. Extinguishers are also on a schedule for hydrostatic testing.

VII. Flammable Material Handling and Storage

All flammable and combustible materials must be handled and stored in a safe manner. Refer to Appendix E for definitions on flammable and combustible materials. Minimize the amount of flammable liquids in the lab or shop. Excess flammable materials may increase the risk of a fire or dangerous spills.

Store flammables in a UL-approved flammable storage cabinet. Flammables must be stored away from strong oxidizers, such as most strong acids. On a benchtop, limit flammable liquids to only those for immediate use.

Always bond metal containers to metal receivers when transferring large volumes of flammable liquids or gases.

Areas that contain flammable materials must follow the guidelines for storage amounts. See Appendix F for storage of flammable materials.

VIII. Housekeeping

All employees are responsible for routine clean-up of work areas. This includes maintaining proper storage requirements, removal of flammable and/or combustible materials, eliminating all fire ignition sources, etc. See Appendix A for fire hazards and precautions.

IX. Training

Each new employee receives training regarding the fire hazards. The specific training on the departmental hazards is the responsibility of the department.

Reviewed: 2024

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Appendix A- Potential Hazards and Prevention Methods

Hazard	***Precautions***
Overloaded electrical circuits, unsafe wiring and defective extension cords – all buildings	• Plug extenders are not allowed on campus. Power strips with fuses are allowed, but don't overload the circuits. • Extension cords can only be used for temporary setups. They cannot be used as a permanent means of wiring. Check extension cords before each use for frays and cuts. Replace if defective.
Appliances such as coffee makers, hot plates and other heating devices when left on when not in use – Residence Life, all buildings	• Make sure all appliances are shut off at the end of the day. Consider putting coffee pots on timers.
Unattended cooking and open coil appliances – Residence Life	• In areas that have cooking facilities, remain in the area until your food is cooked. Turn off all appliances. • Cooking is restricted in all areas other than designated kitchen areas. Hot plates, crock-pots, electrical frying pans and other open coil appliances are prohibited in dorms and other kitchen areas on campus. Electric coffee pots, microwaves and popcorn poppers are allowed.
Improper use of space heaters – all buildings	• According to the Butte-Silver Bow Fire Marshall, the only allowable space heaters in public buildings are those without heating elements such as ones that are oil-filled. • Keep all combustible materials away from space heaters • Space heaters must be turned off and UNPLUGGED anytime the area/office is unoccupied.
Improper disposal of smoking materials.	• Montana Tech is now a tobacco-free campus. Smoking is no longer permitted anywhere on campus.
Improper use, storage and handling of flammable materials such as gasoline, solvents, flammable chemicals, flammable gases, and paints – Laboratories, Facilities shops and garages	• Any flammable materials should be properly stored in a UL-approved flammable cabinet • Make sure items you are storing together are compatible. Refer to the Montana Tech Chemical Hygiene Plan for information on compatible storage.
Improper use of Christmas tree lights and decorations and associated electrical cords – all buildings	• Only artificial trees are allowed. • All lights must be UL-approved. • Unplug all lights at the end of the day. • If an extension cord must be used, make sure it doesn't present a tripping hazard, and unplug it when no one is around.
Use of candles, incense or other burning materials on campus – all buildings	• They are not allowed in any building on campus.

Hazard	***Precautions***
Poor housekeeping which results in accumulation of combustible materials such as paper, boxes, oil-soaked rags, and flammable liquids – all buildings	• Keep all combustibles away from heat sources. • Recycle or throw away empty boxes, packing material and papers that are no longer needed. • Place rags in a metal container and empty it every night.
Improper use of welding torches and equipment – Facilities & welding programs	• Anyone on campus using equipment that produces heat or sparks must follow the Montana Tech Hot Works Plan or provide a copy of their own plan that meets all requirements.
Gas cylinders – Laboratories, welding shops and labs	• Must be stored upright and secured with chains or straps. • Caps must be replaced when gauges are removed. • Keep away from heat and direct sunlight.

Appendix B: How to use a Fire Extinguisher
(Informational Purposes Only)

Call 911 with any fire or emergency.

In the event of a small fire, and a fire extinguisher is used on a voluntary basis, follow these procedures:

- Always be in a position to exit at any time.
- Use the PASS method:
  - Pull the pin and stand back 8-10 feet
  - Aim at the base of the fire (not the flames)
  - Squeeze the handle
  - Sweep back and forth at the base of the fire. Remember, most extinguishers will last between 8 and 10 seconds.
- If the fire isn't out at this point, evacuate.

Do **not** attempt to use a fire extinguisher if any of the following are met:

- Not trained,
- Have no escape route – call for help,
- Don't know what is burning,
- The fire is spreading rapidly,
- Don't have the appropriate equipment,
- The extinguisher is ineffective,
- Inhale toxic smoke, or
- If drums, cylinders or chemicals are involved.

Appendix C: Fire Extinguisher Selection Guide

		Water		Dry Chemical	
Type of Extinguisher		Stored Pressure	Carbon Dioxide	Multi-Purpose ABC Stored Pressure	Halogenated Agents
Sizes commonly in use (normal capacity)		2.5 gallons	2.5 to 20 gallons	2 to 30 lbs	2.5 to 5 lbs
Classification of Fires	A	Yes	No	Yes	No
	B	No	Yes	Yes	Yes
	C	No	Yes	Yes	Yes
	D	No	No	No	No
Extinguishing Agent		Carbon Dioxide	Sodium Bicarbonate Base	Ammonium phosphate base	Halon 1301 and/or 1211
Method of Operation		Pull pin, aim at base of fire, squeeze handle, sweep at base of fire			
Range		30-40 feet	3-8 feet	5-20 feet	4-8 feet
Approximate Discharge Time		1 minute	8-30 seconds	8-25 seconds	8-10 seconds

Fire extinguishers are placed in five (5) classes, based on the type of fire they are approved to fight:

- Class A: ordinary combustible materials like wood, paper, cloth
- Class B: flammable and combustible liquids like grease, gasoline, oil and oil-based paints
- Class C: energized electrical equipment
- Class D: combustible metals like magnesium and titanium
- Class K: kitchen fires: vegetable oils, animal oils and fats in cooking appliances

Appendix D: Maintenance of Automatic Fire Sprinkling Systems

Montana Tech has 13 locations where automatic sprinkler systems exist and must be maintained.

- Auditorium (stage area only)
- Centennial Hall
- Engineering, Lab and Classroom Building (ELC)
- Family Housing (three (3) units)
- Health Physical Education Recreation Complex (HPER)
- Highlands College – Allied Trades Building
- Highlands College – Trades area only
- Mill Building
- Natural Resources Building (NRB)
- Natural Resource Research Center (NRRC)
- Prospector Hall
- Student Success Center (SSC)/Learning Living Center (LLC)
- University Relations Center (URC)

Monthly Inspection – Boilermen will:

- Verify all controls are in the following position:
    - Normally open valves are in the open position
    - Normally closed valves are in the closed position
- Verify all control valves in open position are either:
    - Locked open
    - Sealed open
    - Equipped with operable tamper switch
- Check pressure gauges for similarity in pressure/check antifreeze temperature – 45 degrees below.

Annual Maintenance is contracted out.

Emergency Procedures

- In the event of a fire with activation of the sprinkling system, the fire sprinkler system automatically sends a "call" to our monitoring company which automatically dispatches the call to the local authorities with the building number and location.
- Occupants of the building may also call 911.
- The maintenance engineers and/or the boilermen are alerted through the fire alarm panels. Security receives a call from the monitoring company.

- The zone control valve is shut “off” and “isolated” once the fire has been extinguished, and instructions are given by the ‘Authority Having Jurisdiction’ – BSB Fire Department.
- The licensed sprinkler contractor is notified for repair of the sprinkler system.

Appendix E: Definitions

The OSHA Laboratory Standard defines a flammable liquid as any liquid having a flashpoint below 100 degrees (°) Fahrenheit (F), except any mixture having components with flashpoints of 100°F or higher, the total of which make up 99% or more of the total volume of the mixture. OSHA further breaks down flammables into Class I liquids:

- Class IA includes liquids having flashpoints below 73°F and boiling points below 100°F.
- Class IB includes liquids having flashpoints below 73°F and boiling points above 100°F.
- Class IC includes liquids having flashpoints at or above 73°F and boiling points below 100°F.

Flashpoint is defined as the minimum temperature at which a liquid gives off enough vapor to ignite in the presence of an ignition source. The risk of a fire requires that the temperature be above the flashpoint and the airborne concentration be in the flammable range above the Lower Explosive Limit (LEL) and below the Upper Explosive Limit (UEL).

The OSHA Laboratory Standard defines a combustible liquid as any liquid having a flashpoint at or above 100°F, but below 200°F, except any mixture having components with flashpoints of 200°F, or higher, the total volume of which make up 99% or more of the total volume of the mixture. OSHA further breaks down combustibles into Class II and Class III liquids:

- Class II includes liquids with flashpoints at or above 100° F and below 140° F.
- Class IIIA includes liquids with flashpoints at or above 140°F and below 200° F.
- Class IIIB includes liquids with flashpoints above 200° F.