Chemical And Hazardous Materials Safety Policy



Rocky Mountain College

Prepared by the RMC Workplace Safety Committee

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Chapter 1: Overview

1-1 Purpose

The purpose of this plan is to provide important hazardous waste information for Rocky Mountain College (RMC). Proper hazardous waste management is important to provide healthy and safe working conditions for faculty, staff, and students, to protect the environment, and to ensure compliance with applicable federal, state, and local laws and regulations. Each group and individual at the College has an important function and responsibility in handling hazardous waste. Any questions or concerns regarding these procedures or information should be directed to Facility Services, extension 1077 (406-657-1077 off campus). For emergency situations, after normal working hours, or weekends, please refer to the contact list contained in Appendix A.

This document is not a hazardous material safety manual. Safe acquisition, storage and use of hazardous materials is handled by the College, specific department, or other applicable entity within the College, with guidance by Facility Services. This document is pertinent to the generation, minimization, storage, recycling and disposal of hazardous waste only. This document was prepared for use within RMC and is intended for use by, and applies to, RMC employees, staff, visitors, and students. If these policies and procedures or any portion of this document is used elsewhere, neither its authors nor the College accept responsibility for its contents.

1-2 Environmental Laws and Regulations

Numerous federal laws and regulations govern the handling, storage, and disposal of chemicals and hazardous waste materials. These include the Resource Conservation and Recovery Act of 1976 (RCRA), Toxic Substances Control Act (TSCA, 1976), Superfund Amendments and Reauthorization Act (SARA, 1986), Clean Water Act (CWA, 1972), and the Emergency Planning and Community Right-to-Know Act (EPCRA, 1986), 29CFR 1910.145 and 6CFR Part 27S. The Montana State laws and codes that also oversee proper treatment of Hazardous and Universal Waste include Hazardous Waste Management, Title 75, Part 4; Montana Code Annotated, Title 75. Environmental Protection; Administrative

It is the responsibility of all College personnel to comply with the outlines within this document. The College is subject to state and/or federal inspection at any time and individuals can be cited for failure to comply with hazardous waste regulations. Conviction can result in civil or criminal penalties, depending upon the seriousness of the violation. It is very important to not discard as ordinary trash any chemical solutions, chemical mixtures, industrial products, infectious wastes, contaminated rags, or any items containing or contaminated with substances which may be regulated under one or more of these programs.

Hyperlinks for all aforementioned codes and regulations can be found in Appendix B.

Rules of Montana, Title 17; and ARM Title 17, Chapter 53, Hazardous Waste Management.

1-3 Responsible Parties

The Campus Safety Committee has been assigned oversight for this Policy. The committee will review the policy annually and will regularly conduct compliance checks. Questions about the policy, current inventory, or storage locations should be referred to the Director of Campus Safety, Director of Facilities or the Executive Vice President. All three officers have access to all chemical inventories (Appendix A).

Chapter 2: Identification

2-1 Definition

A *hazardous material* is any biological, chemical, or physical item or agent that has potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors.

Several agencies define and regulate hazardous materials in the United States, primarily by laws and regulations administered by the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), the Department of Transportation (DOT), and the Nuclear Regulatory Commission (NRC). Each organization carries its own definition of "hazardous material" and is compiled as such:

Any substance or chemical which is a health or physical hazard, including: carcinogenic chemicals, toxic agents, irritants, corrosives, sensitizers; agents that affect the hematopoietic system; agents which damage the lungs, skin, eyes, or mucous

membranes; substances which are combustible, explosive, flammable, oxidizers, pyrophorics, unstable-reactive or waterreactive; chemicals which can cause harm to people, plants, or animals when released by spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing into the environment; radioactive substances; and chemicals which, in the course of normal handling, use, or storage, may produce or release dusts, gases, fumes, vapors, mists, or smoke which may have any of the aforementioned characteristics.

Any substance or item in use, received, or prepared for disposal at Rocky Mountain College that fits any of the above definitions must be properly labeled and inventoried within the department of use. If your job duties involve contact with or exposure to hazardous materials, contact your supervisor for a briefing on specific safety requirements.

2-2 Inventory

Complete hazardous material and chemical inventory lists should be kept and readily available in any designated storage area to reduce unnecessary purchase and disposal. Inventory records should include chemical name, location, any abbreviations used, quantity and volume, Chemical Abstract Number (CAS#), compatibility/reactivity, and whether the substance will degrade over time.

Inventory can be more easily managed by obtaining smaller containers of chemicals and rotating material stock to ensure older solutions are used before any new containers are opened. Proper records can prevent over-ordering, double-ordering, overstock, exhausting supply, and misplacement.

Safety Data Sheets (SDS) are also a key component in recordkeeping and inventory quality. SDS are utilized as a part of comprehensive hazard communication and are required for compliance obligations. Anyone has the right to request SDS data for any area. A blank copy of a Safety Data Sheet is found in Appendix C.

When possible, hazardous materials and chemicals should be substituted for less harmful substances. Some examples include:



2-3 Visual Identification

Labeling

Any chemicals or hazardous materials received by RMC must be properly labeled according to the National Fire Protection Agency (NFPA) four color system (Figure 1). All containers must be clearly labeled with the proper chemical name(s) of the substance(s). Trade names, acronyms, abbreviations, codes, or formulas are not acceptable.

Figure 1: NFPA label guide



Signage

Areas containing hazardous materials and/or chemicals, along with areas where these substances are used, must be adequately identified with correct signage. Signs will contain both text and graphic descriptions of use and/or possible dangers. Type of protective equipment needed will also be identified by these methods for each area.

Chemical abbreviation sheets should also be prominently posted in any work area, lab, or storage area. Common substances and abbreviations should be included on the sheet, along with extra space to extend the list for any laboratory or work area specific abbreviations. An example of a simple format for a Chemical Abbreviation sheet can be found in Appendix C.

Any hazardous material or chemical storage that could be misidentified as normal storage should be properly labeled. The two most common storage types of this nature are flammable material cabinets/refrigerators and chemical storage refrigerators. Flammable storage refrigerators have no exposed ignition sources inside the cabinet, such as lights or switches that could ignite vapors. Any cold storage refrigerator used for chemicals and other hazardous materials need to be labeled with "No Food Storage" stickers. Any cabinet or refrigerator that is not approved for flammable storage units should also be labeled with a "No Flammable Storage" sticker.

Chapter 3: Management

3-1 Personal Protective Equipment

RMC requires personal protective equipment (PPE) when working with or when in the vicinity of specific hazardous materials. The following are general guidelines for PPE use; consultation with each department before operations that may or will involve hazardous materials should be completed to determine detailed risks and appropriate necessary equipment.

Apparel

Protective apparel includes lab coats, aprons, full-body suits, boots, shoe covers, gloves, and gauntlets. Appropriate protective apparel must be utilized during laboratory work involving any chemicals. Laboratory apparel should protect against any possible physical hazards and enable ease of use during execution of physical tasks. Suitable protective apparel for non-laboratory undertakings (facility services, custodial, theatrical scene shop, etc...) should be outlined by each department. In addition to the use of PPE, the following general guidelines also pertain to the work area:

• Do not wear excessively loose clothing, including ties and jackets

- Wear shoes at all times
- Do not wear open-toe shoes, sandals, or cloth footwear
- Be sure to remove all jewelry that may inhibit normal work conditions

Eyes and Face

Eye and face protection is required in areas where chemicals used could cause injury to the eyes or face upon contact from splashing or pouring. The American National Standards Institute (ANSI) along with Title 29, of the *Code of Federal Regulations* (CFR) have set forth specific standards for eye and face protection (please see 29 CFR 1910.133 and ANSI Z87.1-2003). These standards must be met during any activity involving dangerous chemicals. The following guidelines may be used to determine when eye and/or face protection is needed:

- Safety glasses with permanently attached side shields or full-face shields are required whenever there is a potential for projectile objects in the work area
- Safety goggles are required when handling any chemical or process that can create fine dust, fumes, mists, and sprays
- Face shields are required to protect against any hazard that may cause a large spray of airborne dust, vapors, or projectiles
- Face shields are NOT a substitute for eye protection. If both face and eye protection is needed, both types of protective equipment must be used

Hands

The hands and arms provide the highest potential for exposure to hazardous materials and chemicals. Skin contact can be extremely dangerous with numerous substances, and proper measures must be taken to reduce the possibility of exposure. Various circumstances require different types of protection, and each department at RMC is responsible to select appropriate gloves for any potentially hazardous occupations. The following guidelines pertain to required glove use:

- Gloves are required whenever there is potential for contact with corrosive or toxic materials
- Gloves are required whenever there is potential for contact with materials of unknown toxicity
- Glove material should be selected based on chemical resistance
- Gloves will eventually become permeated by chemicals; know the exposure limitations and glove characteristics for specific use
- If gloves are reusable, wash the gloves AFTER you have completed a procedure but BEFORE removing them from your hands
- If gloves are reusable, replace them periodically based on frequency of use and permeability of substances being handled
- Always check gloves for leaks and that they are airtight

Respiratory

Respiratory protection prevents the inhalation of hazardous vapors, fumes, or fine dust into the lungs. Chemical fume hoods provide adequate protection against most exposures. When activities cannot be performed within a fume hood or where adequate ventilation does not exist, personal respiratory protection is required. Personal respirators should be the last option for control of hazardous exposures and are only to be used when engineering controls, process modification, and all other measures have been proven inadequate or impractical.

Two types of respiratory protection are common: face masks and respirators. A facemask is a loose-fitting, disposable device that is designed to provide a physical barrier between the mouth and nose of the user and any potential contaminants in the working environment. Face masks are made of different thicknesses and material types that offer various levels of protection from large particle droplets, splashes, sprays, splatter, and large solid particles. These are intended for one-time use, and should be disposed of properly. Respirators should provide a very close facial fit and efficient filtration of airborne particles. Respirators also block splashes, sprays, droplets, and splatter just as a facemask, and are also designed to prevent inhalation of small particles that may be in the air. Most personal respirators are single use devices, and should be disposed of properly after operation.

Respirators may only be used after medical evaluation, training, fit-testing, and specific approval of the operation by Rocky Mountain College.

3-2 On Site Safety

Site specific safety equipment must be available and easily accessible in all areas where potential for hazardous material and chemical contact exists. Each area may be different, and any individual working in the area must be trained on the specific set of protocols and equipment utilized. In the case of portable safety equipment, do NOT transfer items off-site.

Eye Wash Stations

OSHA and ANSI compliant emergency eyewash stations are required anywhere where potential for splashing, or spattering exists. This includes any workplace, laboratory, or area that stores or utilizes chemicals. An assessment of the area should be complete for proper placement and type of eye wash station. The main types of eyewash stations include plumbed stations, which draw water from the pipes in the building, and portable stations, which are self-contained with their own solutions that do not require the use of building plumbing. Guidelines found in the ANSI Z358.1-2009 Standard provide specific protocol for placement and use of eye wash stations. A summary of these guidelines is as follows:

- Eyewash stations should be installed at accessible locations and reachable within ten seconds of the hazard
- Both plumbed and self-contained eyewash stations should deliver a fifteen minute continuous flow
- Units should be installed where caustic or hazardous substances are present. Consult all relevant SDS for the facility to determine if any chemicals or substances require fifteen minute eye flushing
- Eyewash stations should have an on-off valve, door or pull strap that activates within one second and with one single motion
- Stations should be located in areas free of obstructions
- Flushing fluid temperature must be between 60°F and 100°F

Emergency Showers

Emergency showers are required in any area where possible chemicals and/or hazardous materials pose a threat to the human body. These showers are to be used in emergency situations only, and type and placement should be determined by particular threats and evaluation based upon OSHA regulations. Numerous shower types exist, with the most commonly used including a combination shower consisting of a shower head and eyewash station in a single unit; a drench shower for complete body washing; and a lab shower that is compact and usually recessed to conserve space in a laboratory. Type and placement of emergency showers should follow similar guidelines to eyewash stations.

First Aid /Bloodborne Pathogen

Adequate first aid kits must be stocked, readily available, and easily accessible in any areas where hazardous material and chemicals are stored, handled, or prepared for disposal. Assessment of these areas to determine type and quantity of first aid materials must be accomplished prior to each semester, along with replenishing any used or outdated materials. Reserve replacement first aid items must either be in stock or immediately accessible in the event an accident occurs. All first aid kits on the RMC campus must meet ANSI Z308.1-1998 that outlines first aid kit minimum requirements, summarized below:

- One absorbent compress, 32 sq. in. (206 sq. cm.) with no side smaller than 4 in. (10cm)
- 16 adhesive bandages, 1 in. x 3 in. (2.5cm x 7.5cm)
- One roll adhesive tape, 3/8 in. x 5 yd. (457.2cm) minimum
- 10 antiseptic, 0.14 fl. Oz. (0.5g)
- Burn treatment, 1/32 oz. (0.9g)
- Two pair medical exam gloves
- Four sterile pads, 3 in. x 3 in. (7.5cm x 7.5cm)
- One triangular bandage, 40 in. x 40 in. x 56 in. (101cm x 101cm x 142cm)

Additional first aid materials should be included where deemed necessary. An inventory of materials should also be included with each first aid kit, to facilitate replenishment.

While risk of exposure to bloodborne pathogens due to normal activity at RMC is limited, exposure can be greatly increased when handling hazardous materials and chemicals. Contact with these substances can cause immediate bodily harm with associated exposure to bloodborne pathogens and body fluid. Please consult Rocky Mountain College's comprehensive Bloodborne Pathogen Policy found at: <u>RMC Policies & Procedures | RMC (rocky.edu)</u>.

Fire Extinguishers

Fire extinguishers should be selected based on the area and types of activity within the workplace. Each room/area has specific potential threats for combustible materials. Factors needed in determining fire extinguisher type and placement include the size of area being used, potential combustible materials, and accessibility. Three types of common fire extinguisher classes exist, along with two specialty classes. It is vitally important to match the proper fire extinguisher class with the area and potential hazard as certain classes of extinguishers will intensify some fires. Fire extinguisher class designation should be found on each unit, and is denoted with:

- A letter designation which corresponds to the type of fire it will extinguish
- An illustrated symbol which depicts a visual representation of the type of combustible materials it will extinguish

Classes of fire extinguishers are (please see Appendix C for label examples):

Class A: for fires involving cloth, wood, paper, rubber, and certain plastics ("ordinary combustibles"). OSHA labeling is a triangle around an A.

Class B: for fires involving combustible and flammable liquids, including gasoline, oil, and certain gases. OSHA labeling is a B inside of a square.

Class C: for fires caused by energized electrical equipment. These fires can be due to wiring, circuit breakers, fuse boxes, etc... OSHA labeling is a C surrounded by a circle.

Class D: for fires caused by combustible metals such as sodium, magnesium, and titanium. OSHA labeling is a star surrounding a D.

Class K: for combustible cooking fires caused by grease, fat, or vegetable oil (commonly found in restaurants in kitchens). OSHA labeling is a K surrounded by a hexagon.

Fire extinguishers themselves can be considered hazardous materials when pressurized, full and fail the scheduled test. Most extinguishers carry only a small amount of fire suppressant material, and the propellant is considered hazardous when in need of transport or disposal.

3-3 Storage

Area

Proper storage of hazardous materials and chemicals reduces the risk of accidents and contamination. OSHA has detailed rules for location and construction of rooms or buildings that contain these substances, including explanations concerning combinations of substances that cannot be stored together (follow link in Appendix B).

Improper storage of hazardous materials and chemicals can pose both physical and health hazards. Some physical hazards include fire, explosion, sudden pressure release, and reactivity. Potential health hazards can result from overexposure to a hazardous substance. These effects can be minor, such as a headache or mild skin rash, or serious, with results ranging from skin burns to organ damage or in the rare case, death.

General safety for storage areas requires clear aisles and passageways that are in good repair with no obstructions that could cause further hazards. All containers should be carefully labeled and identified as hazardous, and details of specific hazards outlined on the SDS. ALWAYS check all labels and SDS data before beginning any activity involving hazardous materials. Other storage factors that must be in compliance to minimize any risks include:

- the design of storage buildings/areas (floor plan, shelving, cabinets, etc.)
- construction material of storage building/areas (brick, wood, etc.)
- ventilation
- drainage (sufficient means of keeping spills from spreading into the water supply)
- keeping hazardous materials separated (ie. Flammable materials away from open flame)
- stacking and removal of containers
- emergency equipment (available fire extinguishers, chemical fire extinguishers, clean-up gear)
- accessibility to protective clothing and equipment
- keeping updated records, inventory, and protocol for each area

A number of different OSHA regulations include requirements for hazardous materials storage. Most of these regulations deal with specific substances, such as liquefied hydrogen, or with specific groups of substances such as flammable and combustible liquids. The general safety of hazardous materials handling is covered in 29 CFR 1910.176 and also outlines the concepts described above. It further states that containers should be placed carefully in tiers that are "stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse."

In addition, the regulation states, "Storage areas shall be kept free from accumulation of materials that constitute hazards from tripping, fire, explosion or pest harborage." As previously mentioned, OSHA has regulations that detail where and how a wide variety of substances can be stored, including liquefied hydrogen (1910.103), bulk oxygen (1910.104), and explosives and blasting agents (1910.109). If these substances are utilized or encountered, OSHA regulations should be consulted for best handling and storage practices.

Containers

Selecting the proper container to store and transport hazardous materials and chemicals is a key factor in successfully managing these substances and complying with federal regulations. There are four main areas to consider before storing of a substance:

- 1. Waste characterization
- 2. Selection of containers
- 3. Labeling of containers
- 4. Managing containers

Safe management of hazardous materials and chemicals begins with identifying and characterizing the substance. Vital attributes to document are: what exactly the material is, how it will act within the environment, and what special properties it may retain (ie toxicity, corrosiveness, reactivity, etc...). Characterization should be accomplished *before* placing the substance in a container. Combining incompatible hazardous materials and chemicals is prohibited by law. Keeping incompatible substances separate prevents violent reactions that could cause a fire or explosion.

When characterizing the substance, also be sure to determine the reactivity of the chemical/material with the container itself. Some materials are highly corrosive, which may cause a reaction with a metal drum and possibly cause the drum to fail and release its contents. Plastic or plastic-lined containers are viable solutions for corrosive materials. Steel drums are the ideal choice for non-corrosive and flammable liquids.

Size of the container is also an important factor. Be sure to use a container that is the appropriate volume for the amount of liquid available. For example, a 30-gallon container is a more suitable choice for 20 gallons of liquid than one large 55 gallon drum or two smaller ten gallon drums. Container size should also be considered for on-site storage and transport.

Any chemicals or hazardous materials received by RMC must be properly labeled according to the National Fire Protection Agency (NFPA) four color system (Appendix C). All containers must be clearly labeled with the proper chemical name(s) of the substance(s). Trade names, acronyms, abbreviations, codes, or formulas are not acceptable. An updated Safety Data Sheet (SDS) must also be available in any area housing chemicals and/or hazardous materials.

Managing hazardous material and chemical containers, especially in long-term situations, is key to continued safety. Successful container management includes:

- Keeping containers in good condition
 - Free of dents and corrosion
 - Must not leak

• Must not bulge

- Keep containers closed at all times, except when adding or removing (always use a funnel)
- Utilize proper handling equipment and techniques (don't push, pull, or drag containers)
- Transfer liquids when needed due to leaks, dents, bulges, or over-capacity
- Keep the area cool and dry
- Do not stack ignitable/reactive materials

Inspection

Hazardous material and chemical storage areas will be inspected on an annual basis. Inspections provide not only physical protection but a traceable activity log for any outside sources to utilize. Please use the Hazardous Material and Chemical inspection form found in Appendix C.

Each individual responsible for area inspections should be properly trained in identifying and handling any possible hazardous material and chemical management, including possible leaks, container condition, container labeling, aisle and area clearance, container stacking, etc... Inspectors should follow the previously mentioned form and make careful notes of anything unsuitable. When inspecting any area that stores hazardous materials and/or chemicals, be sure to:

- Accurately fill out the Hazardous Materials and Chemicals inspection form
- Be thorough. Check the tops and sides of all containers and look for any signs of residue or corrosion.
- Check the ENTIRE storage area, which includes visually inspecting all the way around containers.
- Look for any stains in the storage area that may have been caused by leaking due to transport, storage, or transfer.
- Take notes of anything unusual in the storage area, no matter how minute.
- If any problems are found, take care of them immediately and/or notify the area supervisor and Facility Services.

3-4 Disposal

When a container is ready for disposal and is properly tagged, contact Facility Services at 657-1077 to request a pickup. A copy of the "Chemical Disposal Request" form must be given to Facility Services and accompany the container (Appendix C). The request must provide information on name, telephone number, department, department authority, building and room number, container size, chemical names, physical state, hazard type, and any special hazards.

General guidelines concerning RESTRICTED disposal are:

- Any combustible, flammable, or explosive liquids, solids, or gases.
- Any noxious or malodorous liquids, solids, or gases.
- Any solid or viscous substance which may cause obstruction to the flow in the sewer system.
- Any wastewater having pH<5 or >10 or having corrosive properties capable of causing damage.
- Any wastewater containing toxic pollutants.
- Any wastewater having objectionable color not capable of being removed water treatment.
- Any wastewater containing fats, wax, grease, or oils in excess of 100 mg/l, or containing substances which may solidify.
- Any wastewater containing contaminants above the City's specified pollutant limitations. This includes: Antimony, Arsenic, Beryllium, Cadmium, Copper, Cyanide, Lead, Mercury, Nickel, Selenium, Silver, Chromium, Thallium, Zinc, Organic Priority Pollutants, Total Organic Halogens, and Phenolic compounds.
- Any radioactive materials.
- Contact the City of Billings for specific pollutant limits.

Transport

The United States Department of Transportation (DOT) and other agencies strictly regulate the transport of hazardous materials and chemicals. Failure to comply with these laws risks public health, the environment, and the safety of people who manage and transport hazardous material. Non-compliance with any regulation is also subject to fines (up to \$37,500 per violation) and possible imprisonment.

Each person at RMC that manages hazardous materials and chemicals should have a basic awareness of shipping regulations, be able to recognize hazardous materials, and provide a resource to guide others for further training/advice. Anyone that has

to transport hazardous materials should review supplementary information provided by the US Department of Transportation found in Appendix B:

Hazardous Materials Marking, Labeling & Placarding Guide and Do You Know if You're Shipping Hazardous Materials?

DOT requires training and certification as a hazmat employee if you perform any of the following jobs:

- --- Load, unload, or handle shipments of hazardous material.
- --- Prepare hazardous material for transport
- --- Operate a vehicle used to transport hazardous material.

Training and certification is also required if you work in a receiving area or loading dock, or if you handle hazardous material shipments. Training is required even if you arrange the shipment of a package that has been prepared by another person, or if you follow the packaging instructions of a shipper (this includes returns to a manufacturer). Training topics include general awareness of laws and hazardous materials, safety, emergency response, personal protection, shipping requirements, and modes of transport. DOT does NOT require training if you only sign for, open or unpack packages of hazardous material or chemicals. Transport training is NOT required if you simply use hazardous material (ex: cleaning or lab settings) or if you only move material within a building.

Any incoming hazardous materials that require DOT regulation will fall into the following categories and be accompanied by appropriate labels/placards. If they are not, immediately contact the shipping company and your supervisor.

DOT Hazard Class	Hazardous Material Example
Class 1: Explosive	Dynamite
Class 2:	
Division 2.1: Flammable Gas	Hydrogen, propane
Division 2.2: Non-flammable Gas	Nitrogen
Division 2.3: Poison/Toxic Gas	Flourine
Class 3: Flammable liquid	Gasoline, xylene, ethanol
Class 4:	
Division 4.1: Flammable solid	Ammonium picrate
Division 4.2: Spontaneously combustible	White phosphorous
Division 4.3: Dangerous when wet Class 5:	Sodium metal
Division 5.1: Oxidizer	Ammonium nitrate
Division 5.2: Organic peroxide	Methylethyl ketone peroxide
Class 6:	
Division 6.1: Poison	Potassium cyanide
Division 6.2: Infectious substance	anthrax
Class 7: Radioactive	Radiolabeled chemicals
Class 8: Corrosive	Formaldehyde

Class 9: Miscellaneous

Dry ice, lithium batteries

Outgoing hazardous material and chemical shipments need to be properly prepared for maximum safety and compliance with federal regulations. If you prepare or offer hazardous material for shipment, you are responsible for completing all shipping documents, packaging, and labeling of all containers and vehicles. This also includes following written instructions and using packing materials provided by any supplier to return an item. Use the table above to determine the classification for the hazardous material and be sure to prepare and ship according to the rules for that class. If you are unsure of a classification, check the material SDS to determine any associated hazards.

Be aware that certain types of equipment contain batteries, capacitors, transformers, or other components that contain hazardous material and must also be received and transported as such.

Normal Trash

Any container must be completely empty before a determination on type of disposal can be made. For liquids, a container is empty when no liquid can drain from it when tilted in any direction. For solids, including powder, sludge, grease, resin, crystal, etc., the walls of the container cannot contain any encrusted materials. These interior surfaces must be scraped clean of ALL build-up remains. Aerosol containers are empty when the contents and pressure are completely dispensed, and the spray mechanism is in place and functional. Any container that once held extremely hazardous or acutely hazardous substances can at NO TIME be placed in the regular trash.

After a container has been determined empty by the standards above, disposal determination can be made. Use the following quick guide to determine if a container may be discarded in the normal trash:

Type	Hazardous disposal	General solid waste disposal
Glass, plastic or metal containers 5 gallons or less	YES	
All containers greater than 5 gallons	YES	
Aerosol cans		YES
non-refillable cylinders	YES	
Compressed gas cylinders	YES	

Many solid chemicals can be safely discarded into the normal trash, provided they are in containers that are not broken or cracked and have tightly fitting caps. These chemicals are considered acceptable for ordinary disposal because they display none of the properties of hazardous waste, are of low acute toxicity, and have not been identified as having any chronic toxic effects as summarized in the National Institute of Occupational Safety and Health (NIOSH) "*Registry of Toxic Effects of Chemical Substances*". (Appendix B). Before disposing of any chemical the accompanying SDS must be reviewed to determine specific disposal requirements. If the SDS cannot be located, a searchable database for SDS can be found here: FisherScientific.

To dispose of these chemicals, place the containers in a box lined with a plastic bag, tape the top of the box shut, write "Normal Trash" on the box and then place the box next to the lab trash container. Only solid forms of chemicals can be disposed of in this manner.

Sewer Disposal

Certain materials and chemicals are suitable for regular drain disposal. Any substance should be carefully considered to ensure they do not cause damage to the plumbing system or cause other problems such as odors, fumes, or vapors in a building or work area. Acids and alkalis must be diluted to a pH between 6 and 9 prior to disposal. Always add the solutions to the water, not vice versa. Proper steps for drain disposal are:

- 1. Ensure proper PPE is worn
- 2. Before pouring any substance, get a good flow of water going to provide adequate flush.
- 3. Pour the material SLOWLY and allow plenty of water flow before, during, and after pouring.

Before disposing of any chemical the accompanying SDS must be reviewed to determine specific disposal requirements. If the SDS cannot be located, a searchable database for SDS can be found here: <u>FisherScientific</u>.

Special Waste Collection

Solid materials, such as pipette tips, towels, gloves etc., that are minimally contaminated with chemicals (other than P-listed acutely toxic waste) and are drip-free, may also be disposed of in normal trash. Please note that sharps (syringes, needles, etc.) must be disposed of in sharps disposal containers, regardless of whether they were used with any biological materials.

Special waste items that should be set aside for collection include batteries, compressed gas cylinders, ethidium bromide, mercury, waste oil, paint and painting supplies, photographic chemicals, silver recovery, polychlorinated biphenyls (PCBs), fluorescent light bulbs, and compact fluorescent light (CFL) bulbs.

Chapter 4: Emergency Protocol

How to identify an emergency

An emergency situation exists when a significant amount of hazardous material or chemical is released into the environment, and it is necessary to contact all applicable authorities and response teams. Imminent threat to personal safety and/or property is present and specific area emergency procedures are to be followed.

Non-emergency situations occur when a small amount of hazardous material or chemical is lost or discharged and can be cleansed WITHOUT any harm to person or property. While these non-emergencies can be handled within the College, a report is still required to be filed with the appropriate department director.

Emergency responders requesting chemical inventories and/or locations should be referred to the Director of Campus Safety, Director of Facilities or the Executive Vice President. All three officers have access to electronic chemical inventories (Appendix A).

When a reportable quantity of a hazardous material is released into the environment, it is necessary that certain regulatory agencies be contacted. The Director of Facility Services, Director of Campus Safety, or Vice President of Student Life shall determine the need to report a release. The regulatory agency shall be provided with the following:

- The location of the incident;
- The name and telephone number of contact at the incident;
- The type and amount of hazardous material released; and
- The size of the area involved in the incident.

The outside agencies shall include the following:

Montana Department of Environmental Quality Main Office 1520 E. Sixth Avenue

P.O. Box 200901 Helena, MT 59620-0901 Phone: 406-444-2544

Billings Office Airport Business Park IP-9 1371 Rimtop Drive Billings, MT 59105-9702

National Response Center Washington, D.C. 800-424-8802

Center for Disease Control (The College is not required to contact the CDC directly; a state agency will initiate contact if it is deemed necessary.)

Site Specific Emergency Analysis

A preliminary evaluation should be conducted to determine the appropriate plan of action, including:

- Whether the incident could involve a fire, spill, release or leak;
- The quantity of the material and its harmful nature;
- The type of container and its condition;
- The location, time and weather conditions;
- Any exposures to life, property and the environment; and
- Available resources.

The following reference materials are recommended in determining an action plan:

- Area blueprints;
- Chemical inventory list;
- Computerized Safety Data Sheet (SDS) system to help evaluate chemicals and materials present in the site area;
- Poison Control Center to help evaluate chemicals and possible exposure effects to on-site victims and response personnel;
- National Fire Protection Association Handbook of Hazardous Materials;
- Department of Transportation Emergency Response Guidebook; and

If an incident occurs, site specific evaluation shall be performed by appropriate department authorities and any emergency response officials. The department authority shall identify existing site hazards to any response team members, including support staff and first responders. This information will aid in the selection of appropriate engineering, containment and clean-up controls, as well as the selection of personal protective equipment.

Spill and Leak Containment

Four methods of spill and/or leak containment exist and should be practiced when an incident occurs. Only perform these operations when necessary and NO harm to yourself or others is evident.

1. **Basic Containment** is the first step to take in any situation, and consists of regulating or stopping the release of harmful substances by shutting off valves or turning off equipment.

2. **Extinguishment** procedures exist if a fire begins in conjunction with the spill or leak. Immediately notify the Billings Fire Department, determine hazardous/chemical material type, and be sure that any extinguishing equipment to be used is compatible with the substance in question. Using inappropriate fire extinguishers could worsen the situation.

3. **Containment** can be achieved by numerous methods: ensuring all shut-off valves are functioning and in the correct position; plugging any holes or gaps with soft, non-flammable materials; patching and leaks with clay or putty, but being sure to use a large enough patch that it won't fail; and/or placing the damaged container into a larger, undamaged container.

4. **Confinement** should be used with a large spill that needs to be kept to a specific area. Any confinement materials need to be compatible with the substance and non-flammable. Some confinement methods include: diking with sand, earth, straw etc...; blocking the spill flow with heavy plastic or absorbent pads; and/or absorption.

Site Management

In the event that an area must be quarantined due to health hazards and clean-up procedures, and emergency response activities, proper communication and incident information must be made available. Control of the site will be maintained by proper campus officials and the responding City of Billings emergency team.

After the above protocol of determining material type and immediate dangers, three emergency zones will be delineated. These zones will include (although terminology may differ depending on the City response team) a Hot Zone, Warm Zone, and Cold Zone.

<u>Hot Zone</u> is the immediate area containing the incident, including the substance and container. This zone could pose danger to life and health, and the only personnel permitted shall be dressed in the appropriate personal protective equipment.

Warm Zone encompasses the Hot Zone and is considered safe for staff and responders to enter with limited PPE unless stated otherwise by the on-site coordinator.

<u>Cold Zone</u> further encompasses the Warm Zone and is restricted to campus officials and emergency response personnel. Minimal or no PPE may be required within the Cold Zone.

Appendix A: Contact List

On Campus Contacts

<u>Facility Services</u> 406-238-7233 Email—facilities@rocky.edu Local Contacts

Billings Police Department

657-8200 220 N. 27th Street

Director of Campus Safety 406-238-7293 Email—donald.laux@rocky.edu St. Vincent Healthcare

657-7000 1233 North 30th Street Billings, MT 59101 http://www.svhmt.org/

Exec. Vice President 406-657-1018 Email—nasonb@rocky.edu Billings Clinic 657-4000 http://www.billingsclinic.com

Appendix B: Federal, State, and Local regulation links

City of Billings HAZMAT response team http://ci.billings.mt.us/index.aspx?NID=448

City of Billings Solid Waste Division http://ci.billings.mt.us/index.aspx?NID=219

Environmental Protection Agency Wastes-Hazardous Wastes http://www.epa.gov/osw/hazard/

Occupational Safety and Health Administration Hazardous and Toxic Substances http://www.osha.gov/SLTC/hazardoustoxicsubstances/index.html

Department of Transportation Hazardous Materials Information http://phmsa.dot.gov/hazmat/info-center

Montana Code Annotated

- Montana Code Annotated, Title 75. Environmental Protection
- Hazardous Waste Management, Title 75, Chapter 10, Part 4

Administrative Rules of Montana

- Administrative Rules of Montana, Title 17
- ARM Title 17, Chapter 53 Hazardous Waste Management

Overview of Universal Waste Regulation https://deq.mt.gov/twr/Programs/hazmat

NOAA

The National Oceanic and Atmospheric Administration maintains a <u>searchable database of Hazardous Chemicals</u>. The site also includes a virtual mixture prediction tool.

The Registry of Toxic Effects of Chemical Substances (RTECS) https://www.cdc.gov/niosh/rtecs/default.html

Hazardous Materials Marking, Labeling & Placarding Guide, U.S. Department of Transportation, Research and Special Programs.

https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2021-11/USDOT%20Chart%2017.pdf

Do You Know if You're Shipping Hazardous Materials?, U.S. Department of Transportation, Research and Special Programs. <u>https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/Do You Know 0.pdf</u>

U.S. Department of Transportation Office of Hazardous Materials Safety https://www.phmsa.dot.gov/about-phmsa/offices/office-hazardous-materials-safety

Parts 130, 171---180 and 397 of Title 49, *Code of Federal Regulations* (49 CFR), U.S. Government Printing Office <u>https://www.ecfr.gov/current/title-49</u>

Appendix C: Forms and Labels

U.S. Department of Labor Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910 1200. Standard must be consulted for Form Approved

Occupational Safety and Health Administration (Non-Mandatory Form) specific

	OMB No. 12180072
IDENTITY (as Used on Label and List	Note: Blank spaces are not permitted. If any item is not applicable or no information is avail b le, the space must be marked to indicate that.

Section I

requirements.

Manufacturer's name	Emergency Tele	Emergency Telephone Number		
Address (Number, Street, City, State and ZIP Code)	ber, Street, City, State and ZIP Code) Telephone Number for Information			
	Date Prepared			
	Signature of Prep	Signature of Preparer (optional)		
Section II—Hazardous Ingredients/Identity Information				
Hazardous Components (Specific Chemical Identity, Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Section III_Physical/Chamical Characteristics				
Boiling Point	Specific G	ravity $(H_2 0 = 1)$		

Section III - Thysical Chemical Characteristics				
Boiling Point		Specific Gravity ($H_20 = 1$)		
Vapor Pressure (mm Hg)		Melting Point		
Vapor Density (AIR = 1)		Evaporation Rate (Butyl Acetate = 1)		
Solubility in Water				

Appearance and Odor

Section IV—Fire and Explosion Hazard Data

Flash Point (Method Used)		Flammable Limits		LEL	UEL	
Extinguishing Media		1				
Special Fire Fighting Procedures						
Unusual Fire and Explosion Hazards						
(Reproduce locally)						OSHA 174 Sept. 198
Section V—Reactivity Data						
Stability	Unstable			Conditions to Avoid		
	Stable					
Incompatibility (Materials to Avoid)				I		
Hazardous Decomposition or Byproducts	S					
Hazardous	May Occur			Conditions to Avoid		
rotymetizauon	Will Not Occur					
Section VI—Health Hazard Data						
Route(s) of Entry	Inhalation?	Ski	in?		Ingestion?	,
Health Hazards (Acute and Chronic)						
Carcinogenicity	NTP?	IARC Monographs?		OSHA Re	gulated?	
Signs and Symptoms of Exposure						
Medical Conditions						
Generally Aggravated by Exposure						
Emergency and First Aid Procedures						
Section VII—Precautions for Safe Handl	ling and Use					
Steps to Be Taken in Case Material	Is Released or Spilled					
Waste Disposal Method						

Other Precautions

Section VII—Control Measures

Respiratory Protection (Specify Type)			
Ventilation	Local Exhaust		Special
	Mechanical (General)		Other
Protective Gloves E		Eye Protection	
Other Protect	ive Clothing or Equipment		

Work/Hygienic Practices

Chemical Abbreviations

All containers must be clearly labeled with contents and a hazard indication. Labs may use abbreviations as long as this or another sheet is prominently posted in the lab. This list includes common substances. Extend the list as necessary with area-specific abbreviations.

ACIDS:		LOW HAZARDS:	
Corrosive to skin, eyes, and respiratory tract SDS Sodium doc		Sodium dodecyl sulfate, detergent	
HCl	Hydrochloric acid	TAE	Tris acetic acid + Ethylenediaminetetra
HF	Hydrofluoric acid		acetic acid
ТСА	Trichloroacetic acid	TBE	Tris boric acid + Ethylenediaminetetra
H ₂ SO ₄	Sulfuric acid		acetic acid
		PBS	Phosphate buffered saline, buffer
BASES:		SSC	Sodium chloride sodium citric acid
Corrosive to	skin, eyes, and respiratory tract	ТЕ	Tris ethylenediaminetetraacetic acid
КОН	Potassium hydroxide	SSPE	Sodium chloride sodium phosphate +
NH ₃ OH	Ammonium hydroxide		Ethylenediaminetetraacetic acid
NaOH	Sodium hydroxide	STET	Sodium chloride
			Ethylenediaminetetraacetic acid
FLAMMA	ABLE LIQUIDS:		tris Triton X-100
Fire hazard		TNT	Tris sodium chloride Tween-20
EtOH	Ethyl alcohol	TPE	Tris phosphoric
MeOH	Methanol		ethylenediaminetetraacetic acid
IPA	Isopropyl alcohol	STE/TEN	Sodium chloride tris
			Ethylenediaminetetraacetic acid
TOXIC:		DI	Deionized water
Harmful by	ingestion or skin absorption		
DEDC	Disting a subscription of a		

DEPCDiethyl pyrocarbonate**DMSO**Dimethyl sulfoxide

DMSO Dimethyl sulfoxide *Carries hazardous materials through the skin*

LABORATORY-SPECIFIC ABBREVIATIONS:

Abbreviation	Material

– Post in appropriate area –

HAZARDOUS MATERIALS and CHEMICAL

Storage Area Self-Inspection Form

Area inspected_

Hazardous Materials and Chemical storage areas must be inspected at least per semester.

Explain any problems found and corrective actions taken in the "Comments" section.

This log is part of the facility operating records and must be kept for a minimum of three (3) years.

Emergency Procedures Postec Inspector's initials	Comments / Corrective Actions									
Inspector's initials					 	 			 	
Emergency Procedures Postec										
Containers tagged and dated										
Incompatibles segregated										
Containers Labeled										
Container conditions sound										
Proper secondary containment										
Area free of spills / leaks						 				
Appropriate aisle clearance				 	 		 			
Number of containers										
	Inspection Date									

Hazardous Materials and Chemical Form information

Area Inspected: The area being inspected should be indicated clearly on the form. If there are multiple containment spaces within an area, please give specific locations and indicate that another form exists for the other space(s).

Inspection Date:

Enter the month, day and year of the self-inspection.

Number of containers: Indicate clearly the number of containers being stored within the area.

Appropriate aisle clearance:

• Examine the area for any obstructions that may impede transport or management of hazardous materials and chemicals. Emergency exit routes must also always be clear of any objects.

Area free of spills/leaks:

• Look on and around hazardous material containers and chemical containers for signs of spilled or leaked materials. There should be no visible signs of contamination on tops or sides of containers, in the containment, or elsewhere in the general storage area. Wipe down or clean containers, containment and the storage area as necessary.

Proper secondary containment:

- Is the secondary containment of adequate size? The volume of the secondary containment needs to be:
 - \circ 110% the volume of a single container if only one is present or,
 - if multiple containers use a single secondary containment, the containment volume should be the larger of 150% of the largest container volume, or 10% of the total volume of all the containers.
- Is the secondary containment compatible with the chemicals to be stored? Make sure it won't be degraded or corroded by a spill.
- Are all materials stored in the same secondary containment compatible? Make sure they won't chemically react with each other.
- The adequacy of secondary containment is dependent on many specifics of the storage location.

Container conditions sound:

• All containers of hazardous materials and chemicals should be closed with a tightly fitting lid. A properly sealed container in sound condition will not leak when laid on its side or overturned.

Containers labeled:

• All containers, whether the contents are hazardous or non-hazardous, including individual use containers, squeeze bottles and spray bottles, should have a legible label, which at a minimum indicates the name of the product and the primary hazard of the contents. Generally recognized products do not need the hazard indicated.

Incompatibles segregated:

- Are materials that could adversely interact with each other or the other containers separated by secondary containment and/or distance? For instance, are acids kept away from bases and flammables/combustibles separated from oxidizers? The product SDS is a good source for identifying incompatible materials.
- For materials transferred to a new container, such as a spray bottle, is the material compatible with the new container?

Containers tagged and dated:

• Each container must have a label indicating contents and potential hazards placed in an obvious and easy to read location. Date of initial storage, expiration dates, and date of material transfer must also be clearly stated.

Emergency procedures:

• For each area where hazardous materials or wastes are stored, verify that simplified response guides for emergencies are posted.

Inspector's initials

Comments/Corrective actions:

• Explain any problems found and corrective actions taken. Follow-up promptly on deficiencies noted. When corrections are completed, initial, date and explain corrective actions taken.

Chemical Disposal Request Form

1.	Department
2.	Building
3.	Room Number
4.	Department Head
5.	Phone Number
6.	Type of Waste 🗌 Biohazard 🗌 Hazardous 🗌 Radioactive 🗌 Universal
7.	Chemical Name of Waste
8.	Common Name of Waste
9.	Amount (weight & # of containers)
10.	Physical State Solid Liquid
11.	Additional Comments

Requestor Signature

Date

Received Signature Date

_

ACADEMIC LAB LABELS

CONTAINER	WORKPLACE ACCUMULATION START DATE		WASTE ACCUMULATION AREA		MANEJESE CON CUIDADO CONTIENE RESIDOUS TOXICOS
ACCUMULATION	HAZARDOUS	WASTE	FEDERAL LAW PROHIBITS IMPROPER DISPOSAL	IF FOUND CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY	HANDLE WITH CARE
WORKPLAGE	PROPER D.O.T. SHIPPING NAME UN OR NA:	GENERATOR INFORMATION NAME:	PACILITY: ADDRESS: PHONE: CITY:	STATE:ZIP: EPA ID NO: MANIFEST DOCUMENT NO:	EPA WASTE NO:

· . · ·					
		1			
	•	CHEMICAL NAME	HAZARD KEY 4 - SEVERE 3 - SERIOUS 2 - MODERATE 1 - SLIGHT 		
	•.	FIRE HAZA	RD 174RD	- - -	. •
				«	•
		PERSUNAL PERSONAL PRO			
			H ⊡r+n∉+¥+¥ I pq+n∉+¥ J ⊡r+n∉+¥+¥		
	· .		A C + ME + X + J A charge your supervises for specialized handling directions A charge your supervises for the special A charge ways and the special charge of the special A charge ways and the special charge of the special A charge ways and the special charge of the special A charge ways and the special charge of the special A charge ways and the special charge of the special A charge ways and the special charge of the special charge of the special A charge ways and the special charge of the		
		MANUFACTURER: PHONE:			

	DATE	
·	·	