Safety

University of Nebraska Medical Center

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UNMC HAZARD COMMUNICATION PLAN

The University of Nebraska Medical Center (UNMC) is committed to providing a safe working environment and believes employees have a right to know about health hazards associated with their work. It is the manager/supervisors/primarily investigator's responsibility to inform employees of the identities and known hazards of the chemicals to which they could be exposed to while working. So that employees can make knowledgeable decisions about any personal risks of employment, this Hazard Communication Plan includes policies, procedures, and responsibilities designed to develop in employees an awareness of potentially hazardous chemicals in the work place and to train employees in appropriate and safe working habits.

It is important that employers assume responsibility for laboratory safety. All employees will have access to pertinent safety information through their supervisory staff. The people who work in any given laboratory are best able to detect potential hazards in either the facility or in work procedures. When safety concerns arise, employees are encouraged to contact their supervisor, or Environmental Health & Safety (EHS) at (402) 559-6356.

Necessary information will be available to inform the employee how best to handle hazardous chemicals.

I. RESPONSIBILITY

A. Management of the Hazard Communication Program rests with EHS. The UNMC Safety Manager has the responsibility to:

1. Work with administrators and other employees to develop and implement appropriate chemical hygiene policies and practices.
2. Verify the performance of protective equipment.
3. Monitor and evaluate procurement, use, and disposal of chemicals used in the lab.
4. Maintain appropriate audits records.
5. Develop precautions and adequate facilities in conjunction with project directors.
6. Know the current legal requirements concerning regulated substances.
7. Seek ways to improve the Hazard Communication Program.
8. Work to investigate programs of waste reduction and recycling to minimize generation of hazardous waste.

B. The laboratory director is responsible for:

1. Ensuring that safe work practices are observed.
2. Ensuring that personnel are adequately trained.

3. Ensuring that Material Safety Data Sheets are

C. The immediate supervisor has overall responsibility to:

1. Ensure that workers know and follow the hazard communication plan rules

2. Ensure that protective equipment is available and in working order
3. Ensure that appropriate training has been provided

4. Ensure routine inspections of emergency equipment.

5. Know the current legal requirements concerning regulated substances.

6. Determine the required levels of protective apparel and equipment.

7. Ensure that facilities and training for use of any material being ordered are adequate.

8. Ensuring that Material Safety Data Sheets are available for their area. (Refer to IV. MATERIAL SAFETY DATA SHEETS for more information.)

D. The laboratory employee is responsible for:

1. Planning and conducting each operation in accordance with the Hazard Communication Plan.

2. Developing good personal chemical hygiene habits.

3. Following procedures outlined in this program, becoming familiar with the hazardous materials in their laboratory and using appropriate protective equipment to minimize their risk of exposure.

II. PROCEDURE

Because few laboratory chemicals are without hazards, general precautions for handling laboratory chemicals will be adopted. Precautions include minimizing exposure and assuming that any mixture of hazardous chemicals is more toxic than the most toxic component.

The following procedures are to be adopted when working with chemicals:

A. Accidents and spills
In cases of accidental contact with a chemical, an MSDS will be provided to the personnel giving care to the injured person. . (Refer to IV. MATERIAL SAFETY DATA SHEETS for more information.)

1. **Eye contact:** promptly flush eyes (while eyelids are held open) with water for a prolonged period (15 minutes, minimum) and seek medical attention in the Emergency Department.

2. **Ingestion:** Seek medical attention immediately! If assistance is needed in transporting an ingestion victim, call ext.9-5555. The MSDS may be consulted for appropriate first aid. The Poison Control Center (*9-390-5555) may also be of assistance.

3. **Skin contact:** promptly flush the affected area with water and remove any contaminated clothing; use a safety shower when contact is extensive. Seek medical attention.

4. **Clean-up:** follow the spill cleanup procedure in this policy: section XII, Spills and Accidents.

5. **Report:** In all instances of employee exposure, an incident report form will be completed and forwarded UNMC Policy #2000 Safety Policy – section Incident/Accident Reporting Policy.

B. Avoid unnecessary exposure to chemicals.

1. Do not smell or taste chemicals. Apparatus that can discharge toxic chemicals (vacuum pumps, distillation columns, *etc.*) should be fitted with a trap appropriate to the exhausted chemicals.

2. Wear appropriate gloves when the potential for contact with toxic materials exists. Inspect gloves which are reusable before each use, wash them before removal, and replace them periodically.

3. Chemicals will not be brought into a work area unless design, construction and fire protection in receiving, storage and area of use are appropriate for the quantities and known hazards of the chemicals involved.

4. No eating, drinking, smoking, or application of cosmetics or lip balm in the laboratory.

5. No storage of foods or beverages in areas where laboratory chemicals are present, or in refrigerators or freezers containing hazardous laboratory chemicals.

6. Glassware or utensils that are used for laboratory operations will not be used for handling, preparing, or consuming food or beverages.

7. Handle and store laboratory glassware with care to avoid damage. Do not use damaged glassware.

8. Wash areas of exposed skin thoroughly before leaving the laboratory.

9. Avoid behavior that might confuse, startle, or distract another worker.

10. Do not use mouth suction for pipetting or starting a siphon.

11. Confine long hair and avoid loose clothing.

12. Wear shoes at all times in the laboratory. Sandals, shoes with open toes, perforated shoes, or any shoes made of cloth (*e.g.* athletic shoes) should not be worn.

13. Keep the work area clean and uncluttered, with chemicals and equipment properly labeled and stored. Clean up the work area on completion of an operation or at the end of each day.

14. Ensure that appropriate eye protection, where necessary, is worn by all persons, including visitors, in areas where chemicals are stored or handled.

15. Wear knee length lab coats or aprons with arm protectors while working with hazardous materials (e.g., chemicals or infectious material). Lab coats should be buttoned to protect the employee's clothing. Wear with cuffed arms or use cuffed sleeve protectors when working with bloodborne pathogens or chemicals.

16. Use other protective and emergency apparel and equipment as appropriate.

17. Contact lenses should <u>not</u> be worn in a laboratory. Gases and vapors can be concentrated under the lenses and cause permanent eye damage. Furthermore, in the event of a chemical splash into an eye, it is often nearly impossible to remove the contact lens to irrigate the eye because of involuntary spasm of the eyelid. Persons who <u>must</u> wear contact lenses should inform their supervisor to determine which procedures would require wearing no-vent goggles for contact lens wearers.

18. Lab coats and personal protective equipment (PPE) are worn in the Laboratory <u>only.</u> Lab coats and PPE which become contaminated should be immediately changed. Contaminated lab coats must placed in the laundry bag at the point of use.

19. Seek information and advice about hazards, plan appropriate protective procedures, and plan positioning of equipment before beginning any new operation.

20. If personnel must leave the area while a reaction is taking place (*e.g.*, an experiment which must go continuously for 24 hours), precautions should be taken appropriate to the hazard. The lights should be left on, an appropriate sign placed on the door (including name and phone number of a contact person) and the door locked. Provisions should be made in case of a leak, spill or utility failure (*e.g.*, flask tipping and expelling contents, failure of cooling water) so that all material will be contained in a secondary vessel in case of a spill.

21. Biosafety cabinets are tested and certified upon installation, relocation and at least annually. The hood and Biosafety cabinets will have a valid inspection/certification sticker. Biological safety cabinets which fail the certification process are immediately removed from service. Hood and biosafety cabinets installation, use, maintenance, move or decommissioning are coordinated through Facilities Management.

    a) Use a ventilated hood for operations that might result in release of toxic chemical vapors or dust. A good guideline to follow: use a hood or other local ventilation device when working with volatile substances having a Threshold Limit Value (TLV) of less than 50 ppm.

    b) Biosafety cabinets and fume hoods are checked annually for appropriate functioning. The hood will have a valid inspection/certification sticker. If a current sticker is not present, contact Facilities Management.

    c) Keep hood sash at or below the designated safety level indicated by the yellow lines. Keep materials stored in hoods to a minimum, and do not allow materials to block vents or air flow. Leave the hood "on" at all times.

22. Be aware of unsafe conditions and see that they are corrected when detected.

23. Wash hands before conducting any of these activities prevent ingestion

C. Carcinogens

1. Methods in which known and/or suspect carcinogens are used will include techniques for safe handling. Methods will also note that such substances are, or are suspected to be, carcinogenic.

2. All laboratory chemicals identified as carcinogens, or suspect carcinogens, as well as mixtures containing carcinogens, are required to be labeled CARCINOGEN or SUSPECT CARCINOGEN.

3. Contact EHS, x9-6356, to set up procedures for disposal.

4. Investigation of alternate methods that do not involve the use of known carcinogens as reagents is encouraged.

5. Handling Precautions for Known and Suspect Carcinogens:

    a. Protect the hands and forearms by wearing gloves and a lab coat to avoid contact of toxic material with the skin. Protective clothing should remain in the work area.

    b. After working with carcinogenic materials, wash the hands and forearms immediately.

    c. Preparation of stock reagents from known or suspect carcinogenic substances shall be done in a vented fume hood. Hood sashes will be at the appropriate level for protection (*i.e.*: where the yellow lines on the hood and sash match up).

    d. The MSDS for the carcinogen or suspect carcinogen will be used to determine the

appropriate protective equipment and working conditions.

6. Carcinogen warning symbols are placed on Warning Signs outside all Laboratories using or storing carcinogens.

7. Carcinogens of high chronic toxicity* must meet the following requirements before purchase. Laboratories considering the use of any of these carcinogens are required to meet the following criteria.

   a. Obtain the express agreement of EHS for the purchase and use of the specific carcinogen.

   b. Personnel who would be working with the chemical must be provided with training for handling and disposal of the carcinogen.

   c. Develop a plan detailing the use and disposal of high chronic toxicity carcinogens*.

   High chronic toxicity carcinogens include heavy metal compounds and compounds normally classified as strong carcinogens. Some examples are dimethylmercury and nickel carbonyl; benzo-□-pyrene; many N-nitrosamines; 3-methylcholanthrene; 7,12-dimethylbenz[□]anthracene; dimethylcarbamoyl chloride; hexamethylphosphoramide; 2-nitronaphthalene; propane sultone; many N-nitrosamides; bis(chloromethyl)ether; aflatoxin B_1; and 2-acetylaminofluorene.

D. Radioactive Materials Precautions

Departments using radioactive material will follow all guidelines governing the use and disposal of radioactivity outlined in the Campus Radiation Safety Manual. This can be found online at https://info.unmc.edu/safety/ehs-docs/rsm/RSM2014.pdf

Check with Radiation Safety (ext. 9-6356) before starting a procedure which will generate mixed waste (*e.g.*, radioactive AND hazardous chemical).

E. Flammable Compounds Precautions

1. Hazardous chemicals (including flammables) stored in laboratory work areas shall be kept to the minimum necessary for the work being done. Flammable and combustible liquids that are not in use should be stored in safety cans, approved storage cabinets, or inside approved flammable liquid storage rooms.

2. Any flammable solutions compounded from these reagents shall be labeled as flammable.

3. Flammable substances should be handled only in areas free of ignition sources.

4. Flammable substances should never be heated by using an open flame. Preferred heat sources include steam baths, water baths, oil baths, heating mantles, and hot air baths.

5. When transferring flammable liquids in metal equipment, static generated sparks should be avoided by bonding and the use of ground strips.

6. Ventilation is one of the most effective ways to prevent the accumulation of explosive levels of flammable vapors. An exhausted fume hood should be used whenever appreciable quantities of flammable substances are transferred from one container to another, allowed to stand in open containers, heated in open containers, or handled in any other way.

7. .Disposal of flammable compounds

   a. Per Omaha city ordinance, flammables for disposal are not allowed to go down the drain (The one exception to this is ethanol solutions of <24%). Flammables for discard are collected for disposal through the Hazardous Materials Office.

b. Store and dispose of flammable waste according to Chemical Safety Manual.

F. Ether and Other Peroxide Forming Solvent Precautions

These compounds tend to react with oxygen to form explosive peroxides. Many of these compounds are also flammable and must be handled appropriately.

1. When peroxide forming compounds are opened they are to be dated and all material remaining after six months must be disposed of immediately.

2. Disposal of explosive compounds will be done through EHS.

3. Preferred storage for peroxide forming compounds is in an explosion-proof refrigerator for low boiling point compounds, or flammable cabinet for compounds with boiling points above room temperature.

G. Compressed Gas Precautions

1. Compressed gas containers in the laboratory should be limited in number.

2. Containers shall be secured at all times.

3. Care should be taken to keep compressed gas cylinders away from sources of heat or ignition.

2. Designated gas storage areas must be well ventilated. They will be constructed so that oxidizing gases are separated from flammable gases.

3. Campus Safety's approval is required for flammable gas storage in the laboratory.

4. The transportation of these gases shall be by special cart with the cylinders strapped in place and with the valves covered at all times. Department of Transportation regulations governing the transport of compressed gasses will be followed at all times.

5. Valve cover caps should remain screwed on hand tight until the cylinder is in place and ready for use.

H. Dry Ice Handling

Dry ice presents special considerations for use because of the extreme cold and the chance for asphyxiation in enclosed spaces. Dry ice is made from frozen compacted CO_2. It is much denser and colder than regular ice, with dry ice temperature at -109.3^{E} F or -78.3EC, while traditional ice measures 32^{E} F. Dry ice doesn't melt; it goes directly from the solid phase to the gas form.

1. Leather or cryo-gloves are always used when handling dry ice.

2. Dry ice is not to be used in small, enclosed spaces. Because dry ice goes directly to gas form, there is concern of asphyxiation in small spaces with inadequate ventilation.

3. Unused dry ice is allowed to vaporize by leaving in boxes or open on a counter in a large, well ventilated area. Dry ice is not placed in sinks for evaporation as it can damage the sink as well as cause the water pipes to freeze.

4. Packages containing dry ice are packaged in such a way that the dry ice can vaporize without building up pressure inside of the package. Pressurized packages can explode, causing damage or injury. Those packaging dry ice for shipment must receive Dangerous Goods training through EHS, ext. 9-6356.

5. Dry ice packages transported in personal vehicles are separated in a different compartment from the driver and other passengers because of concerns about oxygen displacement, and possible asphyxiation.

I. Liquid Nitrogen Handling

Liquid nitrogen (LN2) is a hazardous substance, which is derived from the ultra-cooling of air. At a normal temperature of -320EF or -196EC, liquid nitrogen can quickly cause severe frostbite in contact with tissues. In situations where liquid nitrogen is misused or persons working with it may not understand its hazards, LN2 may cause frostbite, eye damage, torn flesh, or asphyxiation. Contact of unprotected skin with very cold objects can cause the flesh to freeze to the object. At room temperature, liquid nitrogen evaporates to nitrogen gas. The sudden release of liquid nitrogen can displace significant quantities of breathable air, creating a serious risk of asphyxiation. Contact of liquid nitrogen with room temperature items causes rapid boiling and splashing hazards.

1. When working with liquid nitrogen (liquid phase), the following personal protective equipment is used:

   a. Full face shield (not disposable)

   b. Gloves designed for use in ultra-cold environments, such as cryo gloves. Gloves should be loose fitting so they can be removed in a hurry in case of an accidental spill of liquid nitrogen on the gloves.

   c. Cryo or leather apron worn over lab coat to protect against splashes.

EXCEPTION: For personnel “dipping” large liquid nitrogen freezers to determine LN2 levels, a lab coat is sufficient protection. Small amounts of LN2 evaporate very quickly. By the time the measure stick is raised, there is no liquid nitrogen in evidence to cause a splash injury.

2. When working with liquid nitrogen (vapor phase), the following personal protective equipment is used:

   a. Lab coat

   b. Gloves designed for use in ultra-cold environments, such as cryo gloves.

3. The following LN2 safety precautions are observed:

   a. LN2 is stored or transported in containers designed to hold liquid nitrogen and allow for evaporation. Unvented containers with tight fitting lids are avoided, as natural evaporation will eventually cause the container to explode from expanding gases.

   b. A phase separator device is used when dispensing liquid nitrogen into dewars.

   c. Items in contact with liquid nitrogen become extremely cold. Do not touch any item that has been immersed in liquid nitrogen with unprotected hands. Instead, use cryo gloves or allow the item to warm to room temperature.

   d. Avoid use of substances that become brittle and may shatter when cold, as they may send pieces of the material flying. This includes common glass and large, solid plastics.

   e. Use tongs or other similar devices to remove items submerged in liquid nitrogen, making certain hands and arms are not submersed.

   f. Laboratories using large volumes of liquid nitrogen (larger than movable dewars) will be monitored for acceptable oxygen levels.

g. Persons shipping liquid nitrogen outside the institution in anything but a dry shipper will be current on all DOT / IATA training. For additional information on shipping, contact EHS at 9-6356.

4. In case of accidental contact with LN2:

a. Remove affected clothing immediately.

b. Wash affected area with cool water and apply cool compresses.

c. Complete an incident report form.

d. Seek medical treatment in Employee Health during normal working hours or in Emergency Department after hours or on weekends.

5. Liquid Nitrogen Spills

In the event of a spill, evacuate the affected laboratory until an assessment determines the oxygen level is safe for occupation of the space.

a. For spill clean-up wait for evaporation of liquid nitrogen.

b. For outside verification of space habitability

i. Contact the UNMC plumbers at ext. 9-4050 (after hours call Campus Security at 9-5111) or

ii. If the UNMC plumbers are unavailable, contact Hazmat on call by contacting Campus Security Dispatch at 9-5111.

J. Mercury Reduction/Elimination Initiative

UNMC recognizes the need to minimize and eliminate, if possible, mercury in the laboratory environment. With this in mind the mercury content should be consideration when purchasing new equipment, solutions and supplies.

Contact Chemical Safety at 9-6356 to assist with disposal of any items that contain mercury.

K. Ultraviolet Lights

The best method of protection is to avoid exposure. UV lights used to disinfect work surfaces in a room should only be used when the room is unoccupied. Light in hoods or biological safety cabinets should be used with the sash closed or when the room is unoccupied. Caution should be used when working around equipment when the UV light is on because UV radiation exposure can also occur when the UV light is reflected off shiny surfaces such as stainless steel.

EYES - High intensities of UV light are hazardous to the eyes, and exposure can cause welder's flash[1] and may lead to cataracts and other ailments.

Protective eyewear is beneficial to those who are working with or those who might be exposed to ultraviolet radiation. The protective eyewear should wrap around the sides to prevent radiation from entering in that area. Ordinary, untreated eyeglasses give some protection. In addition, some ordinary eyewear can be treated to give UV protection, but even a treatment that completely blocks UV will not protect the eye from light that penetrates around the lens.

III. CHEMICAL INVENTORY

An annual chemical inventory and a list of hazardous chemicals is required for each laboratory, as per the

Hazard Communication Program:

The MSDS Coordinator or designee from each Laboratory will conduct an annual inventory of all chemical products used and stored in that laboratory.

IV. MATERIAL SAFETY DATA SHEETS

UNMC contracts with MSDSOnline to provide access to Material Safety Data Sheets. As per the Hazard Communication Program, each MSDS coordinator will assure that a Material Safety Data Sheet or equivalent is available in the UNMC MSDSOnline binder for each hazardous chemical. As new chemicals are received into the laboratory they will be added to the binder. EHS can provide assistance to upload MSDSs into the electronic binder.

Material Safety Data Sheets (MSDS) should be available for hazardous materials and chemicals use and stored in the workplace.

The Medical Center along with the hospital and UNMC Physicians has contracted with MSDSOnline for Material Safety Data Sheet (MSDS) storage and retrieval services. An MSDS can be retrieved in two ways - Online and via Phone/Fax. The MSDS should be used to orient personnel to the hazardous associated these items and what personal protective equipment should be utilized. Thousands of MSDSs are available. See Appendix A.

To access MSDS Online: https://msdsmanagement.msdsonline.com/company/ddb19e69-2fb7-4723-9c8b-e8ff4dd13e03/ (This can be found on the quick links page of info.unmc.edu)

You can then search the database in several ways. By name, manufacturer, etc. If you do not find it in our binder on this website look for the link at the bottom of the page to see the search results from the entire MSDSOnline database. The search engine first searches a binder that contains MSDSs that have been placed in it by our employees. If it does not find an MSDS there it will search the entire MSDSOnline database and tell you at the bottom of the screen how many MSDS it found. Click on the number and you will be able to see the list.

PHONE AND FAX BACK SERVICE

MSDS can be obtained via a phone and fax service. This method assures accessibility to all employees.

Contact MSDSOnline 24 hours/day – 7 days/week

1-888-362-7416 (toll-free)

V. CONTAINER LABELING

Chemical containers will be labeled as per the Hazard Communication Program. Each research laboratory is responsible to verify that all containers received for use will:

A. Be clearly labeled as to the contents.

B. Be clearly labeled with the appropriate hazard warnings.

C. Labels must not be removed or defaced until container is emptied.

D. Every employee is responsible for immediately reporting unlabeled containers to their laboratory supervisor.

E. Containers will be checked as they are used to ensure that they are labeled appropriately.

F. If a chemical is transferred from the labeled container to a secondary container, the secondary container must also be labeled with the name of the chemical and any appropriate hazard warnings, including the target organs, as indicated on the original container. An exception is made for when the secondary container is intended for the immediate use by the same employee who does the transfer.

VI. CHEMICAL PROCUREMENT, TRANSPORT AND STORAGE

A. Procurement

1. Information on proper handling, storage and disposal of hazardous substances will be available to all individuals who might come in contact with such a substance.

2. The individual placing an order for a hazardous substance will:

B. Transport

Hazardous chemicals that are hand-carried between laboratories will be placed inside a secondary container to lessen the chance of breakage or spillage.

C. Storage

1. Incompatible materials (*e.g.*, acids, bases, flammables, water reactives) shall be segregated to prevent accidental contact with one another. See Section B-10, Chemical Safety Manual, UNMC Non-Waste Chemical Storage, for more information.

2. Highly toxic chemicals (those chemicals which are shipped double-packed by the manufacturer) whose containers have been opened shall be placed in unbreakable, secondary containers. Chemicals of extreme toxicity (*e.g.*, cyanide compounds) will be kept in a limited access area (locked drawer or cabinet).

3. Stored chemicals will be examined on an annual basis for replacement, deterioration and container integrity.

4. Only the smallest practical amounts of hazardous chemicals will be stored in the laboratory. Bench top work areas and fume hoods are not appropriate storage areas.

5. Avoid exposing stored chemicals to heat and direct sunlight.

VII. ENVIRONMENTAL MONITORING

Regular instrumental testing of airborne substances may be necessary when:

A. A highly toxic substance is used.

B. A new process is initiated which uses toxic substances.

C. A change in an existing procedure using toxic chemicals occurs.

D. A change in staff using the toxic chemical occurs.

VIII. HOUSEKEEPING, MAINTENANCE, AND INSPECTIONS

A. Floors and work benches are cleaned regularly.

B. Inspections

1. Housekeeping and chemical inspections will be conducted at least annually as part of the safety inspections done under the auspices EHS.

2. The laboratory supervisor is responsible for continuously monitoring and inspecting their laboratory and work areas. This may include:

   a. condition of benches and floors (*i.e.*, clean and orderly).

   b. use of lab coats and/or aprons (*i.e.*, worn and buttoned).

   c. use of gloves (*i.e.*, worn when appropriate).

   d. waste disposal (*i.e.*, appropriate container and method).

C. Maintenance

1. All biohazard and fume hoods are inspected annually and certified under the supervision of the Facilities Management Department (ext. 9-4100). Any hood not passing inspection is taken out of service immediately and not used until the hood has passed inspection.

2. Eyewash stations should be inspected and flushed each week by laboratory personnel and records are maintained at least quarterly by the laboratory.

3. Safety showers are inspected, tested, and flushed annually and records maintained in Facilities Management and Planning.

4. Fire extinguishers are inspected annually by a licensed contractor. Inspections are coordinated by Facilities Management and Planning (ext. 9-4100).

D. Passageways

1. Stairways and hallways will not be used as storage areas.

2. Access to exits, fire alarm pull stations, emergency equipment and utility controls will be kept free of obstructions at all times.

IX. MEDICAL PROGRAM

A. Compliance with regulations:

Regular medical surveillance will be established to the extent required by law (*e.g.*, formaldehyde)

B. Routine Surveillance:

Regular instrumental monitoring of airborne concentrations is not usually justified or practical in laboratories but may be appropriate when testing or redesigning hoods or other ventilation devices or when a highly toxic substance is stored or used regularly (*e.g.*, 3 times/week). If you feel a substance used in your work area should be monitored, contact Sue Holmes.

C. Work-Related Injury, Illness or Toxic Exposure

1. An employee must be sent to Employee Health with a completed Incident Report (or to the Emergency Department if the incident occurs after-hours) whenever:

   a. An employee develops signs or symptoms associated with a hazardous chemical to which the employee may have been exposed in the laboratory.

   b. Exposure monitoring for a specific hazardous chemical reveals an exposure level above the action level (or in the absence of an action level, the PEL).

   c. An event takes place in the work area such as a spill, leak, explosion or other occurrence resulting in the likelihood of an exposure to a hazardous chemical.

2. Employee Health will provide medical examination and consultation:

   a. At no cost to the employee.

   b. Without loss of pay.

   c. At a reasonable time and place.

   d. Performed by or under the direct supervision of a licensed physician.

3. If the employee is sent for medical evaluation due to a toxic substance exposure, the following information will be provided to the physician by including on the "Confidential Report of Occurrence":

   a. Identity of the hazardous chemical(s) to which the employee may have been exposed.

   b. A description of the conditions under which the exposure occurred-including quantitative exposure data (if available).

   c. A description of the signs and symptoms of exposure.

   d. Attach a copy of the MSDS (if available) for the chemical(s) involved.

X. PROTECTIVE APPAREL AND EQUIPMENT

A. Each laboratory handling or storing hazardous chemicals will be equipped with:

   1. protective apparel compatible with the required degree of protection for the substance being handled.

   2. safety showers in close proximity to laboratories that handle or store extremely hazardous chemicals.

   3. an eyewash station in close proximity

   4. a fire extinguisher in close proximity

   5. a fire alarm in close proximity

B. Employees must wear gloves appropriate for the potential hazard when the employee has the potential for direct skin contact with hazardous chemicals, blood, and/or infectious materials. (*e.g.*, nitrile gloves for formaldehyde, latex or vinyl for biohazards, neoprene for concentrated acids)

C. Lab coats or aprons with arm protectors or sleeves are to be worn in the laboratory when working with chemicals, tissues, blood, or body fluids. Lab coats should be buttoned to protect the employee's clothing.

D. Goggles, masks with eye protection or chin-length face shields are worn to prevent splashes or sprays of hazardous chemicals if there is a potential for eye, nose, or mouth contamination. This equipment is available in each laboratory where needed.

E. Use of potentially explosive chemicals will be restricted to externally vented fume hoods. In addition, personnel are expected to wear impact resistant goggles. A faceshield may be worn along with the goggles for additional face protection.

F. Any personnel issued/using National Institute for Occupational Safety and Health (NIOSH) approved disposable or reusable respirators must be included in a respiratory protection program. Respirator usage will be consistent with the OSHA regulations for respirators 29 CFR 1910.134 and UNMC policy regarding respirators:

1. Employees must have a quantitative fit test at the time respirator use begins and annually thereafter.

2. A medical examination, including pulmonary function tests, is provided at no charge to the employee for those personnel required to wear respirators. The examination will determine if the employee is physically capable of wearing a respirator.

3. Respirators are provided at no cost to the employee.

4. Respirator type and style must be approved by EHS.

5. Where air purifying chemical cartridge respirators are used NIOSH guidelines will be used to determine the frequency of cartridge replacement.

XI. RECORDS

A. Summaries of Incident Reports relating to laboratory employee illness, injury, or exposure will be evaluated by the Chemical Safety Committee.

B. Employee Medical Records resulting from above incidents are retained by Employee Health.

XII. SIGNS AND LABELS

A. Prominent signs and labels of the following type will be posted:

1. Emergency telephone numbers of emergency personnel/facilities, laboratory director and alternate contact person.

2. Location signs for clean areas (food allowed), safety showers, eyewash stations, other safety equipment and exits.

3. Warnings in areas or on equipment where special or unusual hazards exist (*e.g.*, lasers, high energy magnets).

4. Laboratory Information Signs are posted outside each laboratory to advise in general terms of the hazards present within the lab (*e.g.*, corrosive, flammable, radioactivity, biohazard, carcinogen, poison). Information regarding the Laboratory Signs can be found at: http://info.unmc.edu/safety/safety-office/lab-safety/lab-signs.html

XIII. SPILLS AND ACCIDENTS

A. Every effort should be taken to prevent chemical spills.

B. If a spill does occur, the following general procedures are recommended:

1. Chemical Spill Clean-up Guidelines

a. Laboratory personnel will be involved with spill clean-up only if the spill is small (does not pose a hazard to human health or the environment) and capable of being absorbed or otherwise controlled by the employee in the immediate release area. Small spills do not require activation of the Emergency Plan; however, the Emergency Coordinator can provide guidance for any spill clean-up when requested. Remember that any waste generated during spill clean-up should be treated as EPA regulated hazardous waste and be tagged for disposal by the CSO.

b. For any other spill, the UNMC Spill Response Team will clean up the spill.

2. All Spills or Releases

   a. Access to the area should be restricted to individuals involved in the clean-up Evacuate if conditions warrant it. Post warning signs or guards at points of entry to prevent unauthorized access.

   b. The spilled material should be identified, and the scope of the release and the potential for hazard should be assessed. Use the MSDS and additional resources if necessary.

   c. Always use appropriate personal protective equipment (PPE); decontaminate or discard equipment afterwards.

   d. Contact EHS for waste disposal guidelines.

3. Liquid Spills

   a. Contain the spill as quickly as possible using appropriate absorbent/ neutralizing agents
   b. When cleaning up, always start at the outer edges of the spill and work toward the middle of the spill.
   c. Once the whole spill has been absorbed/neutralized, pick up the absorbent, any other clean-up material, and place into an appropriate container; securely seal and label the container.
   d. Remember, if the material was absorbed only and was not neutralized (or otherwise chemically changed), the waste material can still have the hazardous properties of the original spilled material and so must be handled with caution.

4. Solid Spills

   a. Low hazard materials, or materials that have been neutralized, can be cautiously swept up.

   b. High hazard materials should be cleaned up by the UNMC Spill Response Team.

5. Cytotoxic Drug Spill

   Refer to Section B-7, Hazardous Material Fact Sheet FS-15, "Chemotherapy/ Cytotoxic Waste Disposal" of the UNMC Chemical Safety Manual for spill procedures.

6. Mercury Spills are to be cleaned up by Chemical Safety. Chemical Safety personnel will utilize a mercury vacuum and other resources to clean up the spill.

7. Radioactive Material Guidelines

   Refer to Section B-4 "Emergency Procedures for Incidents Involving Radioactive Materials", of the UNMC Radiation Safety Manual.

XIV. CONTAMINATED WASTE REMOVAL/DISPOSAL

To assure that minimal risk to employees, the public, and the environment will result from the disposal of laboratory chemicals. This policy specifies how waste is to be collected, segregated, stored, and transported. Questions regarding disposal of hazardous waste should be directed to EHS, ext. 9-6356

Radioactive materials will be disposed of in accordance with all state and federal regulations. Liquids and solids must be kept separate and disposal containers must be clearly marked with the radionuclide(s). For more specific information refer to the Radiation Safety Manual. To arrange for a pick-up or for questions, please contact Radiation Safety, ext.9-6356.

A. Each laboratory supervisor will ensure that chemicals for disposal generated in his/her area are collected and disposed of in accordance with the Chemical Safety Manual.

B. Chemicals for disposal will:

1. have ONLY the chemical name marked on the collection container.

2. have a Chemical Collection Tag attached to the container when ready for pick up.

a. Chemical Collection Tags are requested from EHS, ext. 9-6356, at the time a container is ready for disposal.
b. The tag is completed with the requested information. The tag is to be attached to the container.To submit electronically, access the Chemical Safety Pick-up form directly at the following address: https://app1.unmc.edu/forms/ehs/cso_pickup.cfm

C. Collected chemicals will be contained in a secondary container that is large enough to contain the contents of the largest primary container. For flammables stored in a flammable cabinet, the flammable cabinet acts as the secondary container.

D. Primary containers for the collected materials will have lids which are closed when not in use.

E. Glass contaminated with significant amounts of hazardous chemicals will be segregated for disposal by EHS. Contact the EHS, ext. 9-6356 for a determination on whether the contamination is significant.

XV. EMPLOYEE INFORMATION AND TRAINING

A. Employees will receive information and training by the department to apprise them of the known hazards of chemicals present in their work area.

B. Such information will be provided at the time of an employee’s initial assignment to a laboratory and prior to assignments involving new exposure situations.

C. All employees will be informed of:

1. The contents of the Hazard Communication Plan standards.

2. The location and availability of the hazard communication plan.

3. The location and availability of MSDS's which includes sections on the hazards (signs and symptoms associated with exposure), safe handling, storage, disposal, and the PEL's of OSHA-regulated substances and recommended exposure limits to non-regulated substances.

D. All employees will receive training in:

1. Methods of observation that may be used to detect the presence of release of hazardous chemicals.

2. Physical and health hazards of chemicals in the work place.

3. Measures employees can take to protect themselves (including emergency procedures and personal protective equipment).

4. Details of the Hazard Communication Plan.

5. The method that employers will use to inform personnel of the hazards associated with non-routine tasks (example, cleaning a reactor vessel).

XVI. INFORMING CONTRACTORS

It is the responsibility of each laboratory, aided by EHS to provide contractors with the following information:

A. Hazardous chemicals to which they may be exposed while on the job site.

B. Measures the employee may take to lessen the possibility of exposure.

C. The location of MSDS's for hazardous chemicals in that specific laboratory.

D. Procedures to follow if they are exposed.

XVII. GLOSSARY

The following terms are used as part of the Hazard Communication Plan:

CARCINOGEN A substance capable of causing cancer.

CHRONIC An adverse effect with symptoms that develop slowly over a long period of time or that frequently recur.

FLAMMABLE Capable of being easily ignited and of burning with extreme rapidity.

INFECTIOUS MATERIALS Sources that cause infections either by inhalation, ingestion, or direct contact with the host material.

LABORATORY USE A work place where relatively small quantities of hazardous chemicals are used on a non-production basis.

MSDS Material Safety Data Sheet

OSHA Occupational Safety and Health Administration, the regulatory branch of the Department of Labor concerned with employee safety and health.

PEL Permissible Exposure Limit. The legally allowed concentration in the work place considered to be a safe level of exposure for an 8-hour shift, 40 hours per week.

PHYSICAL HAZARD A chemical for which there is scientifically valid evidence that it is a combustible liquid, compressed gas, explosive, flammable, organic peroxide, oxidizer, pyrophoric, unstable (reactive), or water reactive.

TOXIC Chemical with the ability to damage or interfere with the metabolism of living tissue. Damage over a short span of time or single exposure are characteristics of an acutely toxic substance. Chronically toxic chemicals cause damage with long term or repeated exposures.

TLV Threshold Limit Value. An exposure level under which most people can work consistently for 8 hours a day, day after day, with no harmful effects. A table of values and accompanying precautions is published annually by the American Conference of Governmental Industrial Hygienists which is available from EHS.

Appendix A

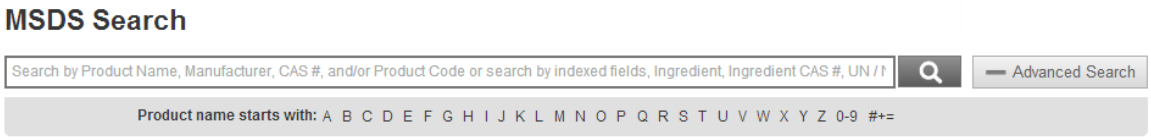
MSDSonline HQ - Viewer Quick Reference Guide

❖ Accessing your Account:

Go to your organization's HQ link: https://msdsmanagement.msdsonline.com/company/ddb19e69-2fb7-4723-9c8b-e8ff4dd13e03/ (This can be found on the quick links page of info.unmc.edu)

Please highlight this link, then copy and paste it into your browser's address bar. Please note that this link is four use by UNMC, UNMC Physicians and TNMC employees and per our user agreement and copyright laws cannot be used by others

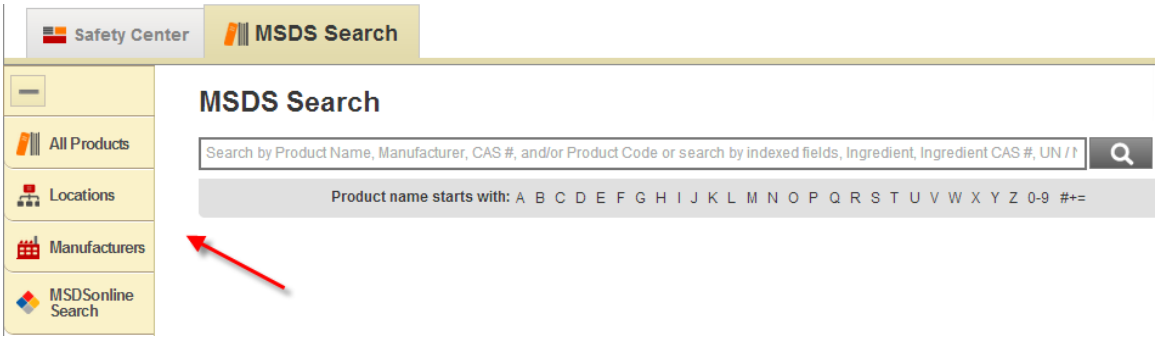
❖ To Search for an MSDS within your company:



1. Type the product information into the single search field and click Search.

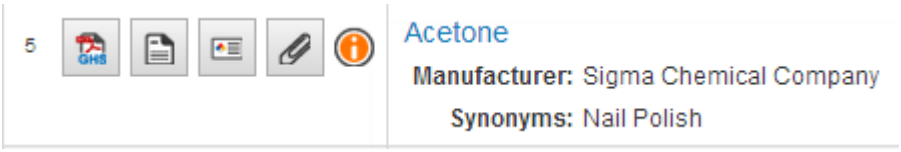
   Hint: You can search for multiple types of data at once. For example, if you are searching for Acetone manufactured by Sigma, you can type in Acetone Sigma in the single search field to search for both product and manufacturer.

2. If you are not able to spell the product name, click on the 1st letter of the product name to search for documents that begin with that letter.



3. To see a full display of documents by Product Name, by Location, or by Manufacturer, click on one of the tabs to the left of the search field.

❖ Once the MSDS has been found:



1. View the MSDS by selecting the PDF icon to the left of the Product Name. You can print or save the MSDS after viewing the PDF.

2. View the summary of the MSDS by selecting the Summary icon next to the PDF.

3. Print labels for secondary containers by selecting the Label icon next to the Summary.

- a) Choose your label b) Select the data fields you would like to include on your label c) Select “Generate Label”

4. View Attached Files by selecting the paper clip icon next to the Label.

If you are not able to find a document in your company’s database, you will be prompted to either search MSDSonline for the document (where you can then view the MSDS and/or add it to the company database) or use the request tool to obtain an MSDS from your Administrator.