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Laboratory Spill Response

Document type: Procedure

I. PURPOSE AND OBJECTIVE:

The Laboratory Spill Response procedure describes the spill response training, laboratory practices for preventing spills, policy to follow for addressing employee injuries from a spill event, spill cleanup materials, and directions for the safe neutralization and removal of chemical and biologic spills.

II. GENERAL POLICIES:

A. **Training**

1. Employees are trained on safety polices within their assigned department and are required to participate in annual safety education modules that reviews spill response and hazardous chemical exposure. Department managers or designee train employees on:
    a. Location and usage of department spill kits, Personal Protective Equipment (PPE), fire alarms, fire extinguishers, safety showers, eye wash and emergency contact phone numbers.
    b. The Safety Data Sheets (SDS) for hazardous chemicals located within their assigned department.
        i. The SDS contains important information about each chemical such as hazards, health risks, and spill response, which will aid employees in the safe handling of chemicals.

ii. The computer database that electronically stores the SDS and contains the department's hazardous chemical inventory is called MSDSonline and can be accessed on the Beaumont Intranet under the Documents menu option, Safety Data Sheets.

iii. See attachment section of this policy for directions on how to access the MSDSonline application and how to search for a chemical's SDS.

B. **Spill Prevention**

1. The Laboratory personnel practice cautious handling, storing and use of chemicals and biologic specimens to reduce the occurrence of spills. Reference the "Laboratory Spill Prevention" document in the attachment section of this policy for guidelines that can be taken to reduce the occurrence of spills.
2. Prior to transferring chemicals or biologic specimens into a secondary container or into a waste container, the employee determines if enough empty volume space remains for the transfer without spillage.
3. Liquid hazardous flammable chemical waste drums contains a drum volume gauge to help aid in determining if enough free volume space remains for the safe transfer of approved flammable chemical waste.

C. **Spill Injury Reporting**

1. If the employee was injured during the spill event or spill clean-up response, the employee and/or employee's manager/designee follows the Human Resource policy, Work Related Injury and Illness, to report the injury and for employee medical attention. Work Related Injury and Illness. The injury reporting form is located on the Beaumont intranet under the Applications menu option, Employee Health Incident Reporting login.

III. DEFINITIONS:

A. Emergency (major) Chemical spill

1. An emergency chemical spill is a spill event that includes one or more of the following:
    a. is too large for one spill kit to contain.
    b. greater than one liter of material spilled.
    c. the chemical is unknown and/or the material is toxic for the employee to clean-up.
    d. occurs in a public place such as hallways or corridors.
    e. has the potential to spread to other parts of the building such as through the Heating, Ventilation and Air Conditioning system (HVAC).
    f. may endanger the environment such as reaching waterways or outside ground.

g. immediate fire hazard.

h. involves mercury.

2. Emergency spills necessitates the immediate evacuation of the area concerned, if not the entire premises. Emergency spills present an immediate hazard including fire, explosion, or chemical exposure to hazardous materials. A large chemical spill requires an emergency response.

B. Simple (minor) Chemical spill

1. A simple chemical spill is a spill event that includes one or more of the following:

a. one that the laboratory staff can handle safely without the assistance of emergency personnel.

b. one liter of spilled material or less.

c. confined and is minimal hazards to health or the environment.

2. Minor spills can be managed by knowledge of the chemical involved in the spill, the chemical's SDS and using the department spill kit.

C. SPILLED

1. Acronym that is included in the employee safety training: **S**ecure the area, **P**rotect yourself, **I**nspect the spill, **L**ocate spill kit, **L**ay down barrier and absorbents, **E**xtract the spill clean-up waste, **D**ispose of waste according to the chemical's SDS.

D. Biological

1. Human or animal bodily fluids or materials such as blood, urine, vomit or feces.

E. Disinfectant

1. Chemical agents designed to inactivate or destroy microorganisms on inert surfaces. A common example of a disinfectant used in the Laboratory is 10% diluted bleach (see reference section of this policy). However, the Laboratory may purchase other types of approved disinfectants.

IV. PROCEDURE:

A. **Spill Kit:**

1. The supplies required for cleaning a spill are assembled into a kit (i.e., box, plastic container, cart) and stored in an accessible location, readily available for staff. Clearly label the storage area containing the spill kit so that staff can identify the location of the spill kit.

a. The kit contents: Spill clean-up agent, PPE (i.e., gloves, goggles, face shield, mask), small broom, dust pan, and biohazard bag to contain the post spill clean-up waste.

b. Common chemical spill agents include Spill X, SASCO and Amphomag (see attachment section of this policy for manufacturer's

instructions). Spill agents must be handled in accordance with manufacturer's instructions. For the most up to date use, access the spill agent container, package inserts, or the manufacturer's website.

i. Amphomag is a single broad spectrum chemical spill agent that can be used to contain and neutralize most chemical spills.

ii. Spill X and SASCO spill agents are specific for the type of chemical spill and is labeled for the chemical category (i.e., Acid, Caustic, Base, Solvent, Aldehyde, Chloride).

c. If no expiration date is assigned to the chemical spill agents, then indicate the date it was put into service and the laboratory director or designee must periodically assess its usability.

i. During the annual Laboratory safety inspection, each campus Laboratory Safety Officer or designee will include an inspection of the department's spill kit(s) as part of the inspection checklist: Laboratory Annual Safety Assessments .

d. The "Chemical Spill Quick Guide" in the attachment section of this policy is posted in each department, near the department's spill kit, for guidelines on emergency treatment of chemical splashes and injuries and the control of chemical spills.

B. **Spill Exposure:**

1. If the spill or spill clean-up effort resulted in eye(s) or face/body exposure, follow Laboratory Emergency Eyewash and Shower Equipment. If hand(s) were exposed, wash hands immediately. If inhalation occurred, leave spill exposure area and seek fresh air immediately. Request help from Manager/Supervisor/coworker(s) and seek medical attention.

a. At the appropriate time, the department Manager or designee assists with documenting the injury in the Employee Health Incident Reporting form.

C. **Chemical Spill Response**:

1. Assess the spill:

a. Determine if the spill is considered emergency or simple.

b. Alert individuals in the surrounding area of the spill who could be impacted.

i. To help aid in the spill response and any possible injuries, request assistance from coworkers or Manager/Supervisor.

c. Identify the chemical(s) involved in the spill and consult the SDS for hazards, spill clean-up and PPE.

i. The spill information section in the SDS is found under the "Accidental release measures", section 6.

a. If the SDS spill response is incomplete, the manufacturer can be contacted for further

information, if time allows. The manufacturer's contact information is located in section 1 of the SDS. The hospital Environment and Life Safety department may also be contacted for advice on how to proceed with the spill clean-up.

d. If safe and practical to do so, stop the spill or leak at its source and use absorbent material (i.e. rags, towels, spill socks) to contain the spill from spreading and to prevent flowing into floor drains.

2. Emergency (major) chemical spills:
    a. If the spill involves flammable chemicals, turn off any ignition and heat sources.
    b. Evacuate the spill area.
    c. Contact the campus security department to activate the emergency Hazardous Materials Incident system.
    d. The Security department and the Lab Manager/Supervisor will follow the directions in the Environment of Care policy Hazardous Material Spill Response Plan.

3. Simple (minor) chemical spills:
    a. Provide ventilation as described in the spilled chemical's SDS.
    b. Cleanup personnel use PPE as described within the chemical's SDS for spill response:
        i. E.g., goggles, mask, gloves, disposable lab coat or chemical resistant apron.
        ii. Avoid breathing in vapors.
    c. Locate the department spill kit, including broom, dust pan, and hazardous bags to contain the spill material.
    d. Proceed with the spill clean-up as instructed in the spill agent's manufacturer directions. Each type of spill agent manufacturer may have specific directions for the use of their product.
        i. In general, the directions for using a spill agent for chemical spills clean-up are:
            a. Encircle (dike) the chemical spill with the spill agent, then cover the entire spill with the spill agent.
            b. Allow the spill agent mixture to neutralize.
            c. Scrape mixture into dust pan.
            d. Place mixture into plastic bag.
                i. Dispose of spill mixture and clean up materials, including absorbents, as recommended by the chemical's SDS and in

accordance with local, state and federal regulations. Place materials saturated with flammable liquids into containers that will limit the potential for combustion and subsequent fire hazards.

e. If safe and feasible, clean scraper and dust pan and return to spill kit. Otherwise, dispose of with the spill mixture and inform department manager so that replacement products can be ordered.

4. After the chemical spill clean-up and disposal, clean the surface with soapy water. Contact the Environmental Services Department (EVS) to determine if they can assist with floor mopping.
5. Dispose of contaminated PPE.
6. Post spill clean-up investigation and reporting
    a. The department Manager/Supervisor or designee:
        i. Investigate the spill event and determine if preventable measures need to be implemented to prevent future spills.
        ii. Document the chemical spill event in the safety reporting system, RL Solutions, by accessing the category "Hazardous Material Spill".
        iii. Communicate the spill event with the department staff and campus Laboratory Safety Officer.
    b. Campus Laboratory Safety Officer communicates the chemical spill event in the Laboratory Safety Committee meeting and, if applicable, the campus Environment of Care meeting.

D. **Biological Spill Response:**

1. Alert people in immediate area of the spill.
2. Cleanup personnel must wear proper PPE such as goggles, gloves, and laboratory coat.
3. Cover spill with absorbent material (i.e. paper towel).
4. Carefully pour laboratory provided disinfectant around the edges of the spill and then onto the spill, avoid splashing.
    a. Chemical spill agents such as Amphomag should not be used to disinfect biological spills.
5. Allow a 20 minute contact period with disinfectant.
6. If broken glass or plastic is present, use a broom and dustpan to remove the material and empty into a biohazard waste bin. Decontaminate the broom and dustpan with disinfectant.
7. Use paper towels to wipe up the spill, working from the edges into the center.

8. Clean spill area with fresh paper towels soaked in disinfectant and then place paper towels in biohazard waste bin.
9. Access RL Solutions, using the "Lab/Specimen" category, to document biologic spills.

E. **Pneumatic Tube System Spill:**

1. On receipt of a pneumatic tube carrier within which a biological specimen or other fluid has spilled or leaked from the primary container, follow the directive given below for notification and clean-up.
    a. **If the spill has leaked from the carrier and is visible on the exterior of the carrier, page facilities maintenance to alert the facilities maintenance tube system personnel of potential system contamination.** Provide the tube station number from which the tube originated, as well as the tube station number of the final destination. If possible, provide information as to the nature of the material which was spilled.
        i. **Biological Specimens**
            a. Wear PPE. If the spilled fluid is a biological specimen (i.e. blood, urine, other body fluid), be sure to also wear a gown and goggles or a face-shield while cleaning-up the spill.
            b. Soak-up or wipe-up the spill with an adequate supply of paper towels; discard towels into a biohazard bag.
            c. DO NOT pick-up bits of broken glass, if any, by hand. Use paper towels to brush glass into biohazard bag. Discard the bag into a hard-side biohazard container.
            d. Discard contaminated foam inserts into the biohazard bag.
            e. Wash contaminated carriers (inside and out) with a hospital-approved disinfectant, allowing for the appropriate contact time. Rinse with tap water and dry.
            f. If there is carpet around the tube station and it becomes contaminated, soak the affected area with the appropriate hospital approved solution for 30 minutes then blot dry with paper towels. Contact Environmental Services to clean the carpet.
            g. Hard-surfaced floors: wipe with disinfectant; rinse with water; dry with paper towels
        ii. **Other Fluids**
            a. If the fluid is a water-based solution, that is NOT hazardous, wipe-up or soak-up the liquid with paper towels. Discard soiled towels into the ordinary trash.
            b. Soiled foam inserts with non-hazardous fluids: remove

from the carrier, rinse well with water, squeeze water from foam and allow to air dry. Dry the carrier (inside and out) with paper towels.

c. If the fluid is hazardous, contact a manager or the Laboratory Safety/Chemical Hygiene Officer for assistance with clean-up using the appropriate spill-cleanup kit. Refer to the Laboratory Spill Clean Up Procedure and the Laboratory Chemical Hygiene Plan.

V. REFERENCES:

A. Laboratory new hire safety training checklist: Laboratory Education - New Hire Orientation .

B. Environment and Life Safety policies:

   1. Hazardous Material Spill Response plan
   2. Personal Protective Equipment - MIOSHA

C. Infection Prevention and Epidemiology: Bloodborne Pathogens Exposure Control Plan

D. Centers for Disease Control and Prevention (CDC) reference for cleaning and sanitizing with bleach: CDC Household Cleaning & Sanitizing and CDC Cleaning and Sanitizing with Bleach after an Emergency and guidelines for disinfection and sterilization in healthcare facilities Chemical Disinfectants

E. College of American Pathology (CAP) Laboratory General Checklist, current version

Attachments

Accessing MSDSonline and search for SDS.pdf

Amphomag Spill Agent Instructions.pdf

Amphomag Spill Cleanup Poster Guide.pdf

Chemical Spill Quick Guide.pdf

Laboratory Spill Prevention Guide.pdf

SASCO Chlorine Acid Base Solvent Directions.pdf

SASCO PolyForm F Treatment Directions.pdf

SASCO Spill Control Product Directions.pdf

Spill-X Treatment Directions.pdf

Approval Signatures

Step Description	Approver	Date
CLIA Site Licensed Medical Directors	Vaishali Pansare: Chief, Pathology	2/10/2023
CLIA Site Licensed Medical Directors	Ann Marie Blenc: System Med Dir, Hematopath	2/9/2023
CLIA Site Licensed Medical Directors	Jeremy Powers: Chief, Pathology	2/8/2023
CLIA Site Licensed Medical Directors	Muhammad Arshad: Physician	1/30/2023
CLIA Site Licensed Medical Directors	Ryan Johnson: OUWB Clinical Faculty	1/27/2023
CLIA Site Licensed Medical Directors	Kurt Bernacki: System Med Dir, Surgical Path	1/27/2023
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Policy and Forms Steering Committee Approval (if needed)	Gail Juleff: Project Mgr Policy	1/27/2023
Policy and Forms Steering Committee Approval (if needed)	Jennie Green: Mgr, Division Laboratory	1/26/2023
	Sarah Britton: VP Laboratory Svcs	1/26/2023
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Operations Directors	Amy Knaus: Dir, Lab Operations C	1/24/2023
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