Title: **SPILLS/DECONTAMINATION**

Principle:

It is the intent of the laboratory to minimize the possibility of spills and accidents by providing personal protective equipment, work practice and engineering controls, and training in handling hazardous or infectious materials. This procedure outlines the containment, clean-up, and reporting steps for the various types of spills which occur in the laboratory.

1. **PROTECT** yourself with PPE.
2. **CONTAIN** the spill with pillow, absorbent, or neutralizer.
3. **NEUTRALIZE** the spill with neutralizing chemical or disinfectant.
4. **CLEAN UP** the spill mixture.
5. **DISPOSE** of the spill mixture in the proper waste.
6. **REPORT** the spill.

Caution:

For chemical spills, do not clean up if hazardous vapors are present, or you are unsure of the danger, or spill volume is **>1** liter.

Evacuate area. Call **911** for assistance.

Procedures:

A. Chemical Spills, Acid

1. Spill kit with **neutralizer only**, e.g., Ansul **Spill-X**.
   a. **PROTECT** yourself with goggles, laboratory coat, and gloves. If splashing can occur, wear lab apron.
   b. **CONTAIN** the spill by applying acid neutralizer around perimeter of spill to dike the liquid. For large spills, encircle the spill with absorbent pillows.

c. **NEUTRALIZE** the spill by adding chemical carefully to entire spill.

d. **CLEAN UP** spill with scoop or dustpan and place in plastic bag or beaker. Do not touch spill mixture with hands. Wipe up spill residue with paper towel.

e. **DISPOSE** of neutralized mixture in laboratory sink and rinse into sewer with copious amounts of water. Spill-X-A acid neutralizer contains magnesium oxide plus additives, but it produces no toxic bi-products during spill clean-up. If broken glass is present, pick glass up with forceps. Discard paper towels in household waste unless grossly contaminated. If absorbent pillow was used, place in plastic bag and contact Safety Officer or Department of Environmental Health and Safety for proper disposal.

f. **REPORT** spill on the Safety/Accident Report form and give to supervisor.

2. Spill kit with **neutralizer and absorbent**, e.g., Mallinkrodt.

a. **PROTECT** yourself with goggles, laboratory coat, and gloves. If splashing can occur, wear lab apron.

b. **CONTAIN** the spill by applying mineral absorbent around the perimeter of the spill to dike the liquid. For large spills, encircle the spill with absorbent pillows. Fill the center with absorbent to cover the spill.

c. **NEUTRALIZE** the spill by covering the wet absorbent with acid neutralizer (Na_2CO_3).

d. **CLEAN UP** spill with scoop or dustpan and place in plastic waste bag. Do not touch spill mixture with hands. If broken glass is present, pick glass up with forceps. Wipe up spill residue with paper towel.

e. **CONTACT** supervisor or safety officer for proper disposal of neutralized acid. Small amounts may be filtered or decanted with large amounts of water into the sewer and the mineral absorbent discarded in the household trash. For large amounts, disposal will be made via DEHS.

f. **REPORT** spill on Safety Accident Report form and give to supervisor.

B. **Chemical Spills, Base (Caustic)**

1. Spill kit with **neutralizer only**, e.g., Ansul **Spill-X**.

a. **PROTECT** yourself with goggles, laboratory coat, and gloves. If splashing can occur, wear lab apron.

b. **CONTAIN** the spill by applying base neutralizer around perimeter of spill to dike the liquid. For large spills, encircle the spill with absorbent pillows.

c. **NEUTRALIZE** the spill by adding chemical carefully to entire spill.

Note: Follow directions on bottle for estimated amounts to add. One 2.0 lb bottle of Spill-X-C will neutralize about 0.5 liter of concentrated base. Wait a few minutes before cleaning up.

d. **CLEAN UP** spill with scoop or dustpan and place in plastic bag or beaker. Do not touch spill mixture with hands. Wipe up spill residue with paper towel.

e. **DISPOSE** of neutralized mixture in laboratory sink and rinse into sewer with copious amounts of water. Spill-X-C base (caustic) neutralizer contains citric acid plus additives, but it produces no toxic bi-products during spill clean-up. If broken glass is present, pick glass up with forceps. Discard paper towels in household waste unless grossly contaminated. If absorbent pillow was used, place in plastic bag and contact Safety Officer or Department of Environmental Health and Safety for proper disposal.

f. **REPORT** spill on the Safety/Accident Report from and give to supervisor.

2. Spill kit with **neutralizer and absorbent**, e.g., Mallinkrodt.

a. **PROTECT** yourself with goggles, laboratory coat, and gloves. If splashing can occur, wear lab apron.

b. **CONTAIN** the spill by applying mineral absorbent around the perimeter of the spill to dike the liquid. For large spills, encircle the spill with absorbent pillows. Fill the center with absorbent to cover the spill.

c. **NEUTRALIZE** the spill by covering the wet absorbent with base neutralizer (citric acid).

NOTE: Follow directions on bottle for estimated amounts to add. Mix the neutralized spill carefully with scoop or dustpan. Wait a few minutes before cleaning up.

d. **CLEAN UP** spill with scoop or dustpan and place in plastic waste bag. Do not touch spill mixture with hands. If broken glass is present, pick glass up with

forceps. Wipe up spill residue with paper towel.

e. **CONTACT** supervisor or safety officer for proper disposal of neutralized base. Small amounts may be filtered or decanted with large amounts of water into the sewer and the mineral absorbent discarded in the household trash. For large amounts, disposal will be made via DEHS.

f. **REPORT** spill on Safety Accident Report form and give to supervisor.

C. **Chemical Spills, Solvent (flammable)**

1. Spill kit with **neutralizer only**, e.g., Ansul **Spill-X.**

a. **PROTECT** yourself with goggles, laboratory coat, and gloves. If splashing can occur, wear lab apron.

b. **CONTAIN** the spill by applying adsorbent (charcoal) around perimeter of spill to dike the liquid. For large spills, encircle the spill with absorbent pillows.

c. **NEUTRALIZE** the spill by adding chemical carefully to entire spill.

Note: Follow directions on bottle for estimated amounts to add. One 1 lb bottle of Spill-X-S will adsorb about 0.5 liter of solvent. Wait a few minutes before cleaning up.

d. **CLEAN UP** spill with scoop or dustpan and place in plastic bag or beaker. Do not touch spill mixture with hands. Wipe up spill residue with paper towel.

e. **DISPOSE** of neutralized mixture as a chemical hazard. See **Waste** procedure, **Chemical, Hazard, Liquid** for proper procedure. Plastic bag of waste mixture should be placed in a cardboard box or empty plastic bottle prior to disposal.

f. **REPORT** spill on Safety Accident Report form and give to supervisor.

D. **Infectious Spills, Except Carpet Spills**

1. **SECURE** the area by diverting traffic or closing off access to the area. In a patient care area, employee should guard the spill and ask another employee to call the lab for spill clean up assistance.

2. **PROTECT** yourself with gloves and lab coat. For large spill or where splashing may occur, wear full facial protection and impervious lab apron also.

3. **CONTAIN** the outermost edges of the spill with paper towel or gauze cloth.

4. **NEUTRALIZE (DISINFECT)** the spill with an EPA-approved detergent, e.g., 10% bleach (prepared fresh) or Zorbicide. Wait 5 minutes.

5. **CLEAN UP** spill mixture with absorbent toweling or cloths. Place toweling in red plastic bag. Re-disinfect spill area and absorb with paper toweling. Repeat process until there is no visible blood or body fluid. Do not touch spill with hands. If spill contains broken glass, use forceps to pick up glass. If spill was on floor, contact Environmental Services for routine clean-up after you have completed this procedure.

6. **DISPOSE** of absorbed spill mixture as infectious waste. See **WASTE** procedure, **INFECTIOUS WASTE, SOLID AND LIQUID** for proper procedure. If disposable gloves or apron were used, place in red bag waste. If vinyl gloves or "lab apron" were used, soak in disinfectant for 5 minutes, rinse and dry, prior to re-use.

7. **REPORT** spill on Safety Accident Report form and to supervisor.

E. **Infectious Spills on Carpet**

Call Environmental Services for assistance in clean-up. (**x8-4915**)

F. **Formaldehyde**

1. **PROTECT** yourself with goggles, laboratory coat, and gloves.

   NOTE: Formaldehyde is highly irritating to the upper respiratory tract and eyes. If the spill is sufficient to cause any difficulty in breathing, burning of the nose and throat, cough, or tearing of the eyes, DO NOT attempt to clean up. Instead, evacuate the area immediately and call x8-8351 for assistance. Only small spills (one pint or less) can be cleaned up without respiratory protection by qualified personnel.

2. **CONTAIN** the spill as needed with paper towel or absorbent pillows.

3. **NEUTRALIZE** the spill quickly with sodium hydroxide, sodium sulfite, or Spill-X-FP powder. Apply enough Spill-X-FP powder to completely soak up the spill. Immediately leave the spill area to minimize your exposure. Allow the absorbed spill to sit for 15 minutes undisturbed.

4. **CLEAN UP** neutralized spill with scoop or dust pan and place in plastic bag. Wipe up all spill residue carefully with whisk broom and dust pan and carefully flush it down a sink

or toilet. Dispose of paper towels, absorbent pillows, and gloves in an air tight plastic bag. If clothing is contaminated, it must be removed and placed in a separate bag. (Contact DEHS x5890 for decontamination of clothing.) DO NOT TOUCH SPILL MIXTURE WITH HANDS. Wash the spill site with a sponge and water.

5. **DISPOSE** of plastic bag containing wastes as chemical waste, solid (see **Waste** procedure).

6. REPORT all formaldehyde spills on the Accident Report form and to the supervisor. Each employee who was in contact with the spill or involved in the clean up must report to Health Service to see if medical surveillance is required.

G. **Radioactive Spills**

1. **PROTECT** yourself with two pairs of gloves and a laboratory coat. If there is a possibility of splashing, also wear a disposable lab apron.

2. **CONTAIN** the spill with paper towel or absorbent pillows. Mark off or isolate the spill area in some way and police it to keep individuals from walking through it. Do not track or spread contamination - if you suspect your shoes are contaminated, remove them before leaving the spill area.

3. **CLEAN UP** the spill from the **outside perimeter** of the spill toward the **center**. Blot or wipe with absorbent towel - use each towel only twice and carefully fold it each time you wipe so that a wiped area does not become re-contaminated. Place the contaminated materials into a double plastic bag.

4. **NEUTRALIZE**, i.e., **DECONTAMINATE** the spill area by repeating the clean-up step using towels moistened with "Count Off" or soapy water. Blot or wipe toward the center of the spill only. Check the area around the spill - including hands, shoes, and clothing - for contamination using a survey meter. If additional contamination is found, re-clean the area until the radioactivity is at acceptable levels, i.e., negligible or below limit of survey meter to detect.

5. **DISPOSE** of all gloves, lab apron, and clean up materials in the solid radioactive waste. If clothing or shoes remain contaminated consult with the Department of Environmental Health and Safety (DEHS) for disposal or further clean up procedures.

6. **REPORT** the spill on the Safety/Accident Report form and to the supervisor. It is the supervisor's responsibility to report all radioactive spills to the radiation safety office X 266-8652.

H. **Elemental Mercury Spill - Broken Thermometer**

1. **PROTECT** yourself with laboratory coat and gloves.

   NOTE: Mercury vapors from spills can create a health hazard to patients and employees if the spill is large enough. A typical laboratory thermometer (less than 10 cc) does not usually present an immediate hazard if spilled. If a larger, mercury-containing device is broken, evacuate immediately. Contact 266-8652 for assistance in clean-up.

2. **CONTAIN** the spill area by isolating the spill area with barricade tape.

3. **CLEAN-UP**. Request immediate clean-up from Environmental Services (**8-4915**).

4. REPORT spill on the Hospital Accident Report form and to the supervisor. The employee must report to Health Services to see if medical surveillance is required.

I. **Decontamination of Equipment**

1. **Infectious material**. Equipment which may become contaminated with blood or other potentially infectious materials must be checked routinely for contamination and prior to servicing or shipping. As needed, the equipment should be disinfected with 10% bleach (prepared fresh) or other approved disinfectant. If the equipment cannot be completely decontaminated before servicing, it is the responsibility of the laboratory to provide PPE to the non-lab service people who may work on the equipment.

2. **Radioactive material**. Any equipment including refrigerators, hoods, freezers, centrifuges, etc., which was previously used with radioactive materials must be decontaminated prior to servicing, moving, surplusing, or transferring to another facility. To decontaminate, wipe with absorbent towels moistened with Count-Off. Dispose of towels in radioactive waste. Perform wipe test (see section procedure) to verify that no contamination exists. Contact DEHS, to obtain "green tag" authorization if equipment is to be decommissioned.

Written by: Gail Zander, CT (ASCP), 8/13/2008

Revised by: Gail Zander, CT (ASCP), 8/18/2012

References: GEN.74600

Attachments: UCH Hazardous Material Spill Guide

Approval of Procedure:

Medical Director Signature: M. Keith Froelich, MD

Date: 8/29/12

HAZARDOUS MATERIAL SPILL GUIDE - UCH

Always protect yourself with:	1 Goggles 2 Gloves 3 Disposable Fluid-Resistant Lab Coat 4. Lab Apron and Face Shield (if splashing can occur).			
SPILL TYPE	CONTAIN	NEUTRALIZE	CLEAN UP	DISPOSE
ACID	Contain the spill with acid neutralizer, mineral absorbent, and/or Absorbent pillows.	Cover the spill with acid neutralizer and mix into the spill	Pick up with scoop or dust pan. Place in waste bag.	Contact Safety Office for proper disposal.8-8351 or pager 303-266-7328
BASE (CAUSTIC)	Contain the spill with base neutralizer, mineral absorbent, and/or absorbent pillows.	Cover the spill with base neutralizer and mix into the spill.	Pick up with scoop or dust pan. Place in waste bag.	Contact Safety Office for proper disposal. 8-8351 or pager 303-266-7328
SOLVENT/ FLAMMABLE	Contain the spill by applying absorbent and /or absorbent pillows.	Cover the spill with solvent absorbent and mix into the spill.	Pick up with scoop or dust pan. Place in waste bag.	Contact Safety Office for proper disposal. 8-8351 or pager 303-266-7328.
SMALL INFECTIOUS SPILL	Contain the spill with paper towels or gauze cloth.	Cover the spill with 10% bleach for 20 minutes.	Pick up spill mixture with absorbent toweling, cloth, or scoop, if glass present. Re disinfect area/ Place all towels in red bag trash.	Dispose of all absorbed spill mixture as infectious waste.
LARGE INFECTIOUS SPILL OR MERCURY	Contain the spill with paper towels and direct traffic around the area.	Call Environmental Services for assistance in clean up, 8-4915		
FORMALDEHYDE	Contain the spill with formaldehyde neutralizer or absorbent pillows.	Cover the spill with formaldehyde neutralizer (green kit) and mix into spill.	Pick up with scoop or dust pan. Place in waste bag.	Contact Safety Office for proper disposal. 8-8351 or pager 303-266-7328
RADIOACTIVE	Contain the spill with paper towels or absorbent pillows.	Absorb spill with paper towels. Wipe down spill with count-off until area is clean by survey meter.	Place all towels in radioactive solid waste.	Dispose of all clean up materials as solid radioactive waste. Contact Radiation Safety Office. Pager 303-266-8652
CYTOTOXIC AGENT	Contain the spill with paper towels or absorbent pillows and direct traffic around the area.	Call the Pharmacy for assistance in clean up, 8-1389		

Laboratory personnel must not attempt to clean up any spill if hazardous vapors are present, the danger of the spill is unknown, or spill volume is excessive (> 1 liter). In these circumstances, the laboratory must be evacuated and 8-8351 or 266-7328 must be called. Report all spills on the laboratory safety/accident report form and give to supervisor. Any adverse physical effects resulting from a spill must be treated with first aid and reported to your supervisor immediately. Fill out employee's report of work related incident, injury occupational illness form and report to the emergency department.

ANNUAL SIGNATURE REVIEW

PROCEDURE TITLE: SPILLS/DECONTAMINATION

Signature on this page insures that each procedure has been reviewed annually. Any changes will be reflected on the procedure by the revised date. GEN.73200

MEDICAL DIRECTOR	SIGNATURE	DATE
M. Scott Lucia, MD	M. Scott Lucia	8/29/12
	M. Scott Lucia	3/24/14