

*"Safety Comes First"*

# Case Department of Occupational and Environmental Safety

Service Building, 1st Floor  
Phone: (216) 368-2906/2907  
FAX: (216) 368-2236  
Website: <http://does.case.edu>

July/  
August  
2009

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## ***Security of Radioactive Materials***

Security of all hazardous materials is a primary concern of DOES and should be a primary concern for all individuals using hazardous materials. Radioactive materials are no exception to this rule. All radioactive material (this includes stock vials and stock solutions) shall be secured against unauthorized access or removal unless you or someone from the laboratory authorized to use the material is present (reference OAC 3701:1-38-17; ODH Broad Scope License).

Equipment containing radioactive materials, i.e., cabinets, refrigerators, freezers, etc. that is located in hallways must be locked or contain a secure lock-box inside the storage unit. Moreover, a refrigerator containing a secure lock-box should

also have a special label posting on the outside of the refrigerator.

If the radiation-labeled equipment does not contain radioactive material and is not being used for radioactive material, then the equipment should be decommissioned. For equipment that is used occasionally for radioactive material storage, the equipment shall be locked even if no radioactive material is currently present.

An unsecured refrigerator or freezer labeled as radioactive but which contains no radioactive material is considered a security violation as per RSOF guidelines.

Radioactive waste does not need to be secured in the same manner as other radioactive material. *However*, waste is to be

kept in the waste area of the laboratory and its activity sensibly minimized.

*For clarity remember, if you or someone from your lab authorized to use radioactive material is not present, all radioactive material must be secured.*

Call DOES at ext. 2906 with any questions regarding security procedures for radioactive materials.



## Chemical Spill Response

*"DOES must be informed immediately of all spills -- call us at x2907 if a spill occurs. After 5 pm Security must be informed : Call x3333."*

A sudden movement. A slip of the hand. And a beaker crashes to the floor, breaking and spilling its contents everywhere. You stare blankly. What do you do? How do you respond? Below are some general spill response procedures as well as guidelines for cleaning up a few specific chemicals.

### General Chemical Spill Response

If an accidental release involving a hazardous chemical occurs, **the area must be evacuated.** Do not re-enter the area until the hazard is assessed, and DOES has confirmed it is safe to do so. **The importance of getting everyone out of the lab cannot be overemphasized.** The only justification for re-entering would be to save a life or to prevent a fire or explosion.

**DOES must be informed immediately of all spills -- call us at x2907 if a spill occurs. After 5 pm Security must be informed – call x3333.**

**Spill Kits.** Every laboratory should have their own spill kit, suitable for cleaning up typical laboratory spills, and its location should be known to everyone in the lab. You can either buy one or create your own. A spill kit should contain the following items:

- spill pillows
- a silicon-based absorbent such as Oil-Dry, kitty litter,

or vermiculite

- dust-pan
- broom or brush
- plastic bags
- waste labels
- rubber gloves
- rubber boots or foot protectors
- chemical splash goggles

**\*REMEMBER: Used spill kits and materials should be treated/disposed of as hazardous waste.**

### Specific Chemical Spill Response:

**Acids.** Use an absorbent material to neutralize the acid. Commercially marketed acid neutralizers or sodium bicarbonate powders both work well. Sand can be used but is not as effective. After the acid has been neutralized, scoop everything into a plastic bag and prepare it for disposal.

**Flammable Solvents.** First, turn off all spark-producing equipment. Then, using an absorbent from the spill kit listed above, begin pouring around the perimeter of the spill area and proceed toward the center. Again, sand is fairly ineffective. Scoop up the absorbent and place it in a plastic bag for disposal.

**Bromine.** Use a sodium thiosulfate solution (5-10%) to react with the bromine. **DO NOT** use ammonium hydroxide, as an explosion can result from mixing any halogen with ammonia. A respirator must be worn during

clean-up.

**Acid chloride.** Use calcined absorbent products such as Oil-Dry, Zorb-All, or dry sand.

**Alkali Metal.** Smother the spilled metal using Met-L-X Yellow Extinguisher and remove it to a safe location where it can be disposed of by reaction with a dry secondary alcohol. Quickly remove any metal particles splattered on the skin and then flush with water.

**Hydrazines.** Flush the contaminated area with water. Do not use anything contaminated with organic materials as an absorbent. After flushing with water, call DOES to assist with the clean-up.

These are just basic guidelines. If you have any doubt about how to handle a spill, call us before doing anything and have as much information as possible concerning the nature and potential hazard of the spill. For more information, see the Chemical Safety Manual. And remember: **ALL spills must be reported to DOES immediately.** After normal working hours Security must be notified and a representative from DOES will follow up with you.



## *Lab Safety during Pregnancy*

If you are pregnant, special precautions need to be taken while working in a laboratory.

For example, certain chemicals used in the laboratory are known to have a harmful effect on the outcome of a pregnancy.

These chemicals are often classified as “reproductive toxins”—quite simply, they are chemicals that can affect the reproductive system, including mutagens (which may cause chromosomal damage) and embryotoxins (which may harm the fertilized egg or fetus).

The following chemicals have been demonstrated to be embryotoxic in humans:

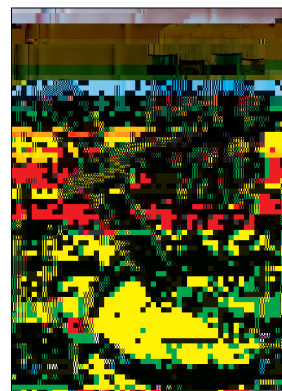
- acrylic acid
- aniline
- benzene
- cadmium
- carbon disulfide
- N,N-dimethylacetamide
- dimethylformamide
- dimethylsulfoxide
- diphenylamine
- estradiol
- formaldehyde
- formamide
- hexachlorobenzene
- iodoacetic acid
- lead compounds
- mercury compounds
- methylene chloride
- nitrobenzene

- nitrous oxide
- phenol
- thalidomide
- toluene
- vinyl chloride
- xylene
- polychlorinated
- polybrominated-biphenyls

There are other chemicals which may be harmful as well. Laboratory workers who are contemplating pregnancy or are pregnant should review the toxicity of the chemicals in their laboratory and should consult DOES to determine whether any of the chemicals used in the laboratory pose additional risk during pregnancy.

- Rinse the bottle three times with water. Be sure to follow all safety guidelines when rinsing acid or base bottles (NOTE: Water may not be used for water reactive substances)
- Mark the bottle “MT” or “EMPTY”
- If the bottle is made of glass, place in a sealed cardboard box and mark as exterior “Glass Sharps” (these will be removed by custodial services)
- If the bottle is made of plastic or metal, dispose of it in regular trash

If you have any questions on this procedure, please contact DOES at x2906/2907.





## ***Modification to the Process of Collecting Animal Carcasses***

*(A memo sent from Marc Rubin, Assistant Director, DOES, on May 26, 2009, outlined these modifications)*

The process of collecting animal carcasses for disposal will be modified to include two new bags. A purple bag for the collection of infectious radioactive animal carcasses has been instituted. These bags are available from

radiation safety along with the normal yellow bags for non-infectious radioactive animal carcasses. Please begin to use these bags now.

These purple bags must be used to store infectious radioactive animal carcasses for decay in storage. Long lived isotope materials must be stored in these purple bags until they are disinfected and sent for eventual


off-site disposal.

The second new bag is clear and labeled "non-infectious non-radioactive" and should be used to discard non-infectious, non-radioactive animal carcasses. This bag will be available from ARC.

Red and biohazard marked bags will continue to be used for infectious animal carcasses.

## ***Handling Radioactive Materials Packages***

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**IMPORTANT NOTE:** While all laboratories must attend training at DOES, labs must hold specific training in the CHP and ECP as it pertains to the actual work they do. Labs will also need an outline of the CHP and ECP training and a sign in sheet to accompany. Store the sign-in sheet and outline with the CHP and ECP. It will be asked for during lab inspections.

**New Hazard Communication (Right-to-Know) Training**

Retraining is required annually.

DOES Small Meeting Room - Service Building 1st Floor

PREREGISTRATION IS *REQUIRED!* - Please call 368-2907

**New Radiation Safety Training**

**DOES STAFF**

W. David Sedwick, Ph.D., (wds), Director and RSO  
Felice Thornton-Porter (fst2), Q.A. Specialist II  
Shirley Mele (smm5), Manager/Ergonomic Coordinator  
Gwendolyn Cox-Johnson (gxc13), Dept. Assistant II  
Jason May (vfl), Dept. Assistant II  
Ronald Tulley (rxt33), Technical Writer

**Chemical Safety**

Marc Rubin (mdr6), Assistant Director, EH&S  
Robert Latsch (rnl2), Specialist II  
Bill DePetro (wjd11), Specialist II  
Tom Merk (tln8), Specialist II  
Jon Birkes (jon.birkes), Specialist II  
Edwin Filppi (edwin.filppi), Specialist I  
Mary Ellen Scott, Ph.D. (mas35), Specialist II  
Anna Dubnisheva (anna.dubnisheva), Specialist I

**Radiation Safety**

Yelena Neyman (yxt13), Specialist I  
Charles Greathouse (cxg118), Analyst Programmer I  
Joe Nikstenas (jen), Operations Supervisor, Specialist II  
Victoria Cook (victoria.cook), Specialist I  
Sylvia Kertesy (sylvia.kertesy), Specialist I

Remember, all back issues of the DOES Newsletter can be found online at <http://does.case.edu> Simply click on the "Newsletter" link in the left-hand column!

Department of Occupational and Environmental Safety  
Case Western Reserve University  
(216) 368-2906/2907 FAX: (216) 368-2236  
(E-mail) [does@po.case.edu](mailto:does@po.case.edu) (www) <http://does.case.edu>