Service Building, First Floor (Office) 216-368-2906/2907 (FAX) 216-368-2236

Department of Occupational and Environmental Safety NEWSLETTER

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Radiation Safety : Incident Reporting and Waste Labelling

Incident Reporting

Incidents involving radioactive materials need to be reported to the Radiation Safety Office as soon as they occur or are discovered.

The types of immediately reportable incidents are:

(1) spills that leave the immediate containment area (e.g. spill tray)

(2) spills or incidents that involve personnel contamination or clothing contamination

(3) missing radioactive materials, whether they are shipments, stock solutions, samples, or waste.

This last issue it vital: any missing radioactive material of any quantity must be reported to the Radiation Safety Office immediately. For example, a recent incident occurred where waste was mistakenly picked up by the evening custodial crew. The lab worker delayed notifying the lab's AU and our office for two days since they did not think that the activity was high enough for concern.

Radioactive waste accidentally picked up by custodial staff is considered a serious mismanagement of material and its "loss" may be an NRC-reportable incident. To ensure that this type of incident does not reoccur, label waste receptacles appropriately (see related article below).

Radioactive Waste Labeling

All radioactive waste containers must be labeled with large yellow radiation trifoil symbols

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Waste Minimization Techniques

Minimizing waste in the laboratory is important for both economic and environmental reasons. The cost of disposing chemicals and other hazardous wastes has drastically increased, with some sites no longer even accepting certain wastes (such as those containing mercury). The need to minimize radioactive wastes is perhaps even more vital since there are very limited available sites for disposal.

Waste minimization also supports our campus' pledge to be as environmentally conscious as possible. One of the most effective ways to do this is to reduce the amount of waste being created: less waste to dispose of means less waste in circulation that can potentially damage our environment.

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In This Issue:

What WASTE!

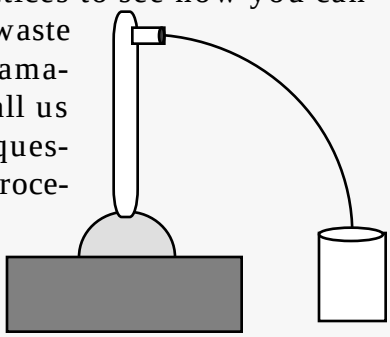
Still Recycling

The amount of acetone wash our department has received for recycling has dropped off over the past few months. Is your laboratory a good candidate for this program?

Recycling is an effective approach to waste minimization and helps us meet government-mandated programs required of all producers of large amounts of potentially hazardous waste. Recycling is especially appropriate for a university, and the Safety Office has equipment and protocols for recycling available. Now it is up to PIs to identify waste that can be recycled out of their laboratory's waste stream.

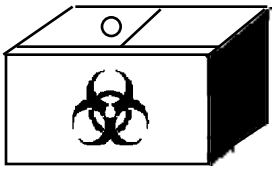
The department has a spinning band still which is currently set up to recycle the common acetone wash used for cleaning glassware. Xylene from histological procedures, as long as it has only traces of wax or alcohol, is also readily recyclable. However, these are not the only options. If your lab produces many gallons of a specific type of waste over a short period of time and you think some of it could be distilled, contact us with the suggestion.

Recycling is a win-win proposition: it saves you money and minimizes waste. Please look into your lab practices to see how you can contribute to our waste recycling and reclamation program. Call us (x2907) with any questions about the procedure.



Don't Recap Syringes

It is against OSHA regulations and CWRU policy to re-cap needles after use—OSHA's fine for this offense is $750 per syringe! Simply dispose of uncapped needles and syringes in the red biohazardous boxes designed to safely store these and other sharps till trash day. These red plastic SHARPS containers have one-way entry construction--place the needle into the box through the hole on top. The lids to these boxes should never come off--since these boxes are designed to remain unopened until disposal, an uncapped needle inside should not be a safety concern for your laboratory.



Other sharps that should be disposed of in the red rigid containers include cannulas and scalpel blades, as well as ANY contaminated sharps.

If you have any questions about this policy or other SHARPS issues, call Safety Services at x2907.

Upcoming Training Sessions

Remember to call our office at the numbers given below to sign up for a training session.

Radiation (x2906)

•**New Training:** May 29(9-12); June 10(9-12), 18(1-4), 27(9-12)
•**Retraining:** May 28(2-3); June 9(10-11), 20(2-3), 25-(10-11)
•**X-ray Training:** call office to set up training session

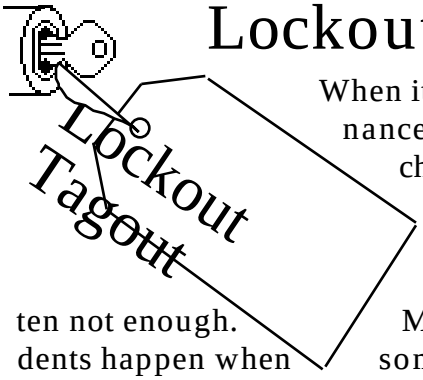
Chemical (x2907)

•**OSHA Lab Standard:** Mondays 1-3 (Service Building Conference Room)

Bloodborne Pathogen (x2907)

•**New Training:** Mondays 3-4 (Service Building Conference Room)
• **Retraining:** (Service Building Conference Room)

Lockout/Tagout



When its time for maintenance, repairs or machine set-up, simply turning a machine off or unplugging it is often not enough. Many serious accidents happen when someone thought a machine or electricity was safely "off." Equipment that can store potential energy in any form that can cause individual harm—whether that energy is in the form of a taunt spring, stored electrical energy, or even hydraulic energy—must be locked and tagged out before any work is done on it.

"Lockout/Tagout" is a way to protect yourself (if you are doing the work) and others by dispersing that energy and insuring that the energy source is not accidentally reconnected while the machine is being worked on.

"Lockout" means blocking energy from the power source. A key or lock is used to secure the energizing valve or switch in the "off" position. "Tagout" refers to placing a tag on the power source to warn others not to turn on the power.

Most of you will not be doing machine set-up, repair or maintenance; however, you need to be familiar with the lockout/tagout concept because it may be employed on machinery you use or in your work area. OSHA regulations state that all employees know about lockout/tagout so that no one will even try to start equipment that has been locked or tagged.

Authorized employees, those who perform lockout/tagout procedures and do the repairs, need more detailed training.

<u>Seven Steps for Lockout/Tagout</u>

1. Think, plan and check. Think through the entire procedure. Identify all parts of any systems that need to be shut down. Determine what switches, equipment, and people will be involved. Carefully plan how restarting the equipment will take place.

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HOT TIPS

Changes to Waste Pick-up Protocol

The Radiation Safety Office has made a few changes in waste pick-up protocol in order to streamline procedures and to increase the accuracy of isotope accounting for both the laboratory and our waste facility. Below is a list of the changes that have gone into effect:

- Instead of calling us with a waste pick-up request, fax us your waste pick-up sheet at **368-2236** (the recent memo sent to all Authorized Users (AU) had the wrong fax number; please note the change).
- A technician will review the waste request, verifying that the waste is within current inventory activity possessed by the AU. If your lab has short-lived waste, be sure to "decay-correct" the waste sheet before faxing it to us.
- A technician will then call to verify the request and arrange a time for pick up. This will usually occur the next day, sometimes the day after.
- Upon picking up the waste, the technician will provide the lab with a copy of its "active RAM inventory" to assist the lab in updating its records, taking the current waste pick-up into account. You can update this copy of your record and mail it back to our office if you wish; it is an excellent way of keeping track of amounts of materials in your inventory and reconciling rounding-off errors that often occur in maintaining these records.

If you have any questions concerning these changes or other waste pick-up issues, please call the Radiation Safety Office at x2906.

Waste Minimization Techniques

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Below are waste minimization tips for both chemical and radioactive waste. Try to incorporate some of these practices into your daily work routine. Remember: THINK LESS (waste, that is)!

Chemicals

For chemicals more than radioactive materials it is possible to create less waste before the experiment even starts. Examine your methods and materials before you begin:

• Purchase only what is needed. Do not order larger quantities to take advantage of unit cost savings—disposal costs down the road for the unused portion of the chemical greatly exceeds the initial savings. CWRU's new chemical store sells chemicals in smaller quantities to provide this sort of convenience.

• Pre-weigh chemicals for undergraduate teaching labs. This will reduce spills and other wastes generated by students weighing their own materials as well as increase laboratory productivity.

• Substitute less hazardous chemicals in experiments to reduce the cost of the disposal of hazardous chemicals. For example, use alcohol instead of benzene; use sodium hypochlorite instead of sodium dichromate.

• Use alcohol or digital thermometers instead of mercury thermometers, which break easily and are extremely expensive to clean up and dispose of.

There are also many post-experiment techniques available that allow you to reduce the amount of waste leaving your lab:

• When cleaning with solvents, use spent solvent for the initial cleaning and use fresh solvent only for the final rinse.

• DOES now has a still that can recycle many would-be waste solvents to near-pure form. Call our department (x2907) to see if your department creates such reusable waste. (see related article on p.2)

• If the result is not a regulated material, perform end-procedure neutralization techniques such as

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Radioactive Materials

• Buy at least two reusable containers for liquid waste. Single-use containers such as milk jugs or tissue culture flasks must be thrown out as solid radioactive waste, adding to the overall waste stream. This can be prevented by using reusable containers, which we return to researchers as quickly as possible.

• Survey gloves, booties, and footcovers after experiments to determine whether or not they are contaminated. If they are not, throw them out as regular or biohazardous waste, not as radioactive waste.

• Use spill trays whenever possible instead of bench paper so if a spill does occur it is completely contained. These trays are available with non-porous covers to make clean-up even easier.

• If you use bench paper, remember that just because an experiment using radiation was performed upon it does not automatically make it radioactive as well. Survey the paper, cut out the contaminated sections, and patch together or throw away the non-radioactive sections of the paper as regular or biohazardous waste.

• Be careful to separate your waste by isotope since their half-lives are different. We segregate waste into drums based on isotope, and when a drum is decayed it can be removed from our storage site, giving us more room for new waste. However, if there is tritium in 32P waste, for example, we cannot decay the waste by storage and must dispose of it by shipment to a radioactive waste facility, even though the bulk of the waste, the 32P, has already fully decayed.

• Be careful to separate regulated chemical waste from non-regulated waste. One splash of regulated material in a gallon of non-regulated material means the whole gallon has become regulated waste and must be expensively disposed of

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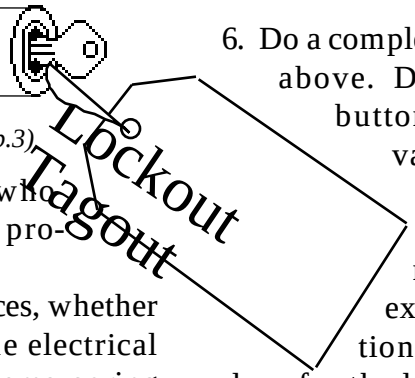
THINK LESS! THINK LESS! THINK LESS! THINK LESS! THINK LESS!

Lockout / Tagout



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2. Communicate. Inform all those who need to know that a lockout / tagout procedure is taking place.

3. Identify all appropriate power sources, whether near or far from the job site. Include electrical circuits, hydraulic and pneumatic systems, spring energy and gravity systems. Check to be sure that the switch is not under load.

4. Neutralize all appropriate power at the source. Standing to the right of the switch (never in front), disconnect the electricity. Block moveable parts, and release or block spring energy. Drain or bleed hydraulic and pneumatic lines, and lower the suspended parts to rest positions.

5. Lockout all power sources. Each worker should have a personal lock, labeled with his or her name and department. You may also use clips, chains and lockout boxes. All padlocks should identify the lockholder by name or identification number. This information should be either stamped on the body of the padlock or on a tag that is fastened to the hasp.

6. Do a complete test. Double check all the steps above. Do a personal check: push start buttons, test circuits, and operate the valves to test the system.

7. Tagout all power sources and machines. Tags should be used mainly for information; they are excellent additional safety precautions but are not sufficient in themselves for the lockout procedure. Tags should say "DANGER! EQUIPMENT LOCKED OUT" and should explain the reason for the lockout, your name, how to reach you, and the date and time of tagging. Tag machine controls, pressure lines, starter switches, and suspended parts. Tags should be fastened to the switch at the same time the lockout is put on and should be removed when the last padlock and the lockout is removed from the switch.

When Its Time To Restart

After the job is completed, follow the safety procedures you set up for restart. With all workers safe and equipment ready, its time to turn on the power.

If you have any questions concerning the lockout / tagout procedure, call the Department of Occupational and Environmental Safety at x2907.

Waste Minimization Techniques

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Chemicals

oxidation-reduction or precipitation and filtration of solids as the last step of an experiment.

• Label all containers, new or temporary, with the proper information, even if the solutions they contain are innocuous. Disposing of an "unknown" waste, which is what materials in unlabeled containers often become, requires time-consuming and costly analysis. In addition, unknowns are dangerous in that they may explode or cause adverse reactions at any time.

Radioactive Materials

as such after all the radiation has decayed.

• Use practices that will prevent the spread of contamination and therefore minimize contaminated waste: wear booties or footcovers; remove or meter your gloves before doing anything else (such as using the telephone or the water fountain).

• Frequently survey your areas (bench, equipment, floors) during experiments to catch any contamination before it spreads and creates greater amounts of contaminated material in your laboratory's waste stream.

THINK LESS! THINK LESS! THINK LESS! THINK LESS! THINK LESS!

Radioactive Waste Labelling

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and carry a log sheet listing the isotope, activity, and date that the individual contents of the waste container were added. Do not wait until the container is sealed for disposal to put on these labels.

Place trifoil stickers on at least two sides of the waste container and on the lid if possible. The labels must be clearly visible from all angles.

Waste containers are labeled not only for your information but also to serve as a warning sign for any individual who may come through the laboratory, including custodial crews. Therefore, label your waste appropriately with everyone who may come into contact with it in mind.

Department of Occupational and Environmental Safety Staff

Dr. W. David Sedwick(wds), Director and RSO
Richard Dell (rxd7), Manager, Safety Services
Richard Harley, Loss Prevention Specialist
Karl Von Ahn (kva), Assistant RSO
Shirley Mele (smm5), Dept. Administrator
Gwendolyn Cox-Johnson(gxc13), Dept. Assistant
Cheryl Palfalvi (cxs13), Dept. Assistant
Carla Kungl (ctk), Technical Writer

Safety Technicians

Robert Armstrong (rja4)
Todd Crawley (tac9)
Robert Latsch (rnl2)
Marc Rubin (mdr6)

RadiationSafetyTechnicians

Karen Janiga (kej2)
Joe Nikstenas (jen)
Felice Thornton-Porter (fst2)
Yelena Tigay (yxt13)
Edward Traverso (ejt)
Shirley Xu (sxx)

Department of Occupational and Environmental Safety Case Western Reserve University
216-368-2906/2907 FAX: 216-368-2236
(E-mail) xx266@po.cwru.edu (WWW) http://does.cwru.edu