



↻ UC IRVINE RADIATION SAFETY NEWSLETTER ↻

Volume II, #2 (December 2006)

Prepared and distributed by the staff of the Radiation Safety Division of EH&S

The purpose of this newsletter is to keep radioactive material users at UC Irvine informed regarding campus radiation safety policies and procedures including tips to improve safety. Visit the EH&S website (www.ehs.uci.edu) under "[Radiation & Laser Safety](#)" for more information.



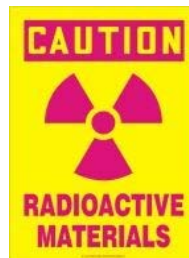
RADIOACTIVE LIQUID WASTE

Always keep the following things in mind to ensure that your radioactive liquid waste procedures meet EH&S requirements and guidelines:

- ❖ **All scintillation cocktail waste is considered to be hazardous waste even if it is free of radioisotopes.** This includes the so-called environmentally safe and biodegradable cocktails. These contain compounds such as monoalkylated benzenes and phenyloxylyethane which are not permitted to be disposed of in the sanitary sewer system on campus since the Irvine Ranch Water District reclaims waste water and uses it to irrigate community parks and slopes.
- ❖ **Do not empty scintillation vials into a waste bottle and then dispose of the vials separately.** It is much easier for you and for EH&S and is more cost-effective to dispose of full scintillation vials. Use the new white EH&S-provided 1.5 ft³ boxes to dispose of these vials, not the much taller brown 2 ft³ boxes currently used for disposal of dry radioactive waste. If you need more of the 1.5 ft³ boxes, contact EH&S at x4-6200.
- ❖ **Since most of the vials counted during your monthly contamination monitoring contain no radioactivity (they are background counts), it is acceptable to reuse them the next time you perform contamination monitoring.** Just store the vials in a safe location until the next monitoring is due and then place the new wipe test applicator tip ("Q-tip") or filter paper in with the prior one/s and recount the vial. *This saves on the expenses related to the vials, scintillation cocktail, and waste disposal.* EH&S reuses vials up to 3 times -- using them more than that is problematic since the fluid can get cloudy due to accumulated dust residue in the cocktail from the wipes with each successive use. If above background counts are obtained, however, the vials should not be reused.



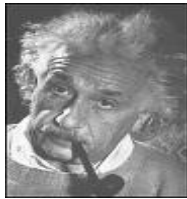
- ❖ The 5-gallon Nalgene® carboys (pictured on the left above) are no longer distributed by EH&S for disposal of radioactive liquid waste. Once you have disposed of the ones you currently have they will be replaced by 2.5-gallon white plastic jugs (similar to that pictured in the middle above). The 1-gallon plastic-coated glass bottles are still distributed by EH&S, as well, but only in special cases.
- ❖ Ensure that all radioactive liquid waste containers are securely capped unless waste is actively being added to them, that they are shielded if needed, and that they are stored such that they are not likely to be knocked off of a countertop or kicked over if on the floor. Also, make sure all liquid waste is stored in secondary containment of sufficient size to contain a leak or spill.
- ❖ More information on all forms of radioactive waste (dry, liquid, sharps, radiolabeled animals) can be found in the *UCI Radiation Safety Factsheet* on the EH&S website: <http://www.ehs.uci.edu/radsafe.html>. Contact the Radiation Safety Division of EH&S at x4-6200 if you have any other questions not answered in the Factsheet..



CLEARANCE OF LAB EQUIPMENT AND ROOMS

The UCI Facilities Management movers will not move any item labeled with a radioactive materials caution sticker or yellow radioactive materials caution tape unless EH&S has first checked it for contamination and posted an EH&S Site Visit Log clearance form on it. This goes for freezers, refrigerators, centrifuges, liquid scintillation counters, water baths, shakers, deli cases, etc. Be sure to remove all containers of radioactive materials (vials, bottles, samples, etc.) from items/equipment to be moved and then clean the outer surfaces that must be handled by the movers to remove any potential contamination. Ideally, you should perform your own contamination monitoring to make sure the items are safe to move. *Always notify the Radiation Safety Division of EH&S at least 2 days prior to the scheduled move of any labeled equipment.* That will give us the time to check the items and post the necessary form on them.

If you will be moving your lab to a new building or to new rooms in the same building, give EH&S as much notice as possible so that a final radiation protection survey of the old rooms and items to be moved can be performed well before the movers arrive.



MEMORABLE QUOTE

**"Science is a wonderful thing if one does not have to earn one's living at it."
*Albert Einstein (1879-1955), German/U.S. physicist***



POOR HOUSEKEEPING

Always make sure that your radioisotope laboratories are neat and orderly. Poor housekeeping increases the likelihood of accidents of all types including radioisotope spills, tripping and falling, fires, electrical accidents, etc.

Do not keep radioisotope containers on the edge of countertops or close to the front edge of a shelf inside of a refrigerator or freezer. That would increase the chance of them being knocked onto the floor.



BREMSSTRAHLUNG

- ❖ **Bremsstrahlung** (“braking radiation”) is composed of x-ray energy photons produced when high energy beta particles are absorbed in a material. The quantity of bremsstrahlung generated is approximately proportional to the square of the atomic number of the absorbing material. That is why low effective atomic number plastic shielding such as Lucite® is preferred over thin lead shielding for ³²P beta particles.
- ❖ When the beta particles emitted by ³²P are absorbed in Lucite® shielding less than 1% of the beta particle energy is converted into bremsstrahlung so additional lead shielding to stop these x-rays is normally not needed. If a very large quantity of ³²P is being shielded with Lucite® (~ 20 mCi or more), it might be necessary to backup the Lucite® shielding with lead to stop the bremsstrahlung. This 2-part shield is called a “graded shield”.



ON-LINE REGISTRATION FOR RADIATION SAFETY TRAINING

Radiation safety training is required prior to starting work with radioisotopes. The *Radiation Safety Seminar* is offered six times a year. For persons who cannot wait until the next seminar before starting to use radioisotopes, EH&S offers *Radiation Safety Interim Training*. Attendance at the seminar is still required within six months of beginning work with radioisotopes.

Registration for both the seminar and interim training is on-line at the UCI Training & Employee Development (TED) website: https://www.ted.uci.edu/kc/login/login_ldap.asp



RADIOISOTOPE INVENTORY UPDATING

Your radioisotope inventory is required to be updated on-line at least every 6 months. EH&S sends email messages to all Principal Investigators (PIs) who have Radiation Use Authorizations each January and July to remind them to do this. If somebody else in the research group is responsible for the inventory updates, the PI needs to notify them that it is due so that it is not forgotten.

Currently, a web-based program called CiBR-Trac is used for maintaining radioisotope inventories. The web address for CiBR-Trac is: <http://ucirvine.ecompliance.net/index.jsp>. If you need assistance in navigating through that program for your inventory updates contact EH&S.

☞ If you have any questions about radiation safety, please contact EH&S at x4-6200 or 949-824-6200 from a non-UCI campus phone. We will be happy to assist you with any radiation safety-related matter!