

MEMORANDUM

TO: Authorized Radiation Users

FROM: Ron Price, Chair, Radiation Safety Committee
Robert Wheaton, Director, Vanderbilt Environmental Health and Safety

DATE: December 10, 1999

SUBJECT: New Liquid Scintillation Vial/Fluid Disposal Procedures

Vanderbilt University just received notice of a significant price increase for the disposal of liquid scintillation fluid and vials. The new pricing structure will go into effect on January 1, 2000. This price increase not only affects Vanderbilt but other research universities as well. The two major impacts to Vanderbilt are a more complicated segregation scheme based on radioisotope half-life and the need to eliminate the use of hazardous scintillation fluid. These changes should not affect the majority of laboratories as they already use biodegradable scintillation fluid and segregate vials by radioisotope.

In the past, we segregated vials and fluid into only two categories: deregulated and NRC-regulated. The deregulated category contained vials or fluid with less than 0.05 $\mu\text{Ci/mL}$ of ^3H and ^{14}C . The disposal cost was \$215 per vial drum and \$275 per fluid drum. The NRC-regulated vials and fluid contained any other radioisotope or greater than 0.05 $\mu\text{Ci/mL}$ of ^3H and ^{14}C . The disposal cost was \$320 per vial drum and \$300 per fluid drum. There was no difference in cost between scintillation fluid that was biodegradable or that contained hazardous solvents.

Segregation Scheme

As of January 1, 2000, the new pricing structure for liquid scintillation vials and fluid is based on radioisotope half-life and type of scintillation fluid used. The new segregation scheme and prices are as follows:

WASTE TYPE	SEGREGATION CATEGORY	BIODEGRADABLE (\$/DRUM)	HAZARDOUS (\$/DRUM)
Deregulated Vials	^3H and ^{14}C <0.05 $\mu\text{Ci/mL}$	\$215	\$215
NRC-Regulated Vials	Half-life less than 30 days	\$255	\$265
	Half-life 30 – 109 days	\$600	\$660
	Half-life greater than 109 days	\$1420	\$2700
Deregulated Fluid	^3H and ^{14}C <0.05 $\mu\text{Ci/mL}$	\$250	\$250
NRC-Regulated Fluid	Half-life less than 30 days	\$265	\$275
	Half-life 30 – 109 days	\$550	\$560
	Half-life greater than 109 days	\$1080	\$2800

As you can see, the price is tripled if ^{35}S is not segregated from ^{32}P , for example. Therefore, VEHS must institute a chargeback system in order to cover the budget increase that would result from researchers who do not make the effort to segregate their radioisotopes. **If you decide not to segregate your scintillation vials and fluid into the categories outlined above, Vanderbilt Environmental Health and Safety (VEHS) will charge you \$100 per box of vials and \$25 per gallon of bulk scintillation fluid.** This charge is based on the increase in price as the radioisotope half-life increases. If your research dictates that you must create mixed radioisotope (dual-labeled) vials, you need to notify Andrea George by email at andrea.k.george@vanderbilt.edu to avoid being charged.

Elimination of Hazardous Scintillation Fluid

Historically, Vanderbilt has paid the same price for disposal of hazardous scintillation fluid and biodegradable scintillation fluid. Under the new pricing structure, the disposal cost for hazardous scintillation fluid is significantly more than that of non-hazardous (up to ~\$1800/drum difference). Therefore, we require that all scintillation fluid used at Vanderbilt be changed to the biodegradable type. This change also has the added benefit of compliance with EPA waste minimization requirements.

If you need to use hazardous scintillation cocktail for your particular research purposes, you must justify this use by submitting your request to the Radiation Safety Committee. (A copy of the request form is attached). Also, if you are approved to use the hazardous scintillation cocktail, **you will be charged \$100 per box of hazardous scintillation vials with radioisotope half-lives less than 109 days and \$400 per box of hazardous scintillation vials with half-lives greater than 109 days (not including ^3H and ^{14}C with activities below 250 mCi/box of 500 vials). You will be charged \$25 per gallon of bulk scintillation fluid with half-lives less than 109 days and \$160 per gallon for bulk scintillation fluid with half-lives greater than 109 days (not including ^3H and ^{14}C with activities below 0.05 mCi/ml).**

If you generate a large amount of scintillation vials, we suggest you consider changing to 7 ml (pony) vials. The smaller size allows Vanderbilt Environmental Health and Safety (VEHS) to more efficiently process this waste stream which will result in a ~\$15,000.00 per year total savings to the institution. Additionally, the smaller vials will significantly reduce your scintillation fluid costs. (The smaller scintillation counter racks cost little to change, \$150.00 from Packard Instruments).

Detailed instructions and a list of biodegradable cocktails can be found at the VEHS website <http://www.safety.vanderbilt.edu>. If you have any questions concerning this new procedure, please contact Andrea George, Assistant Director VEHS, at 2-4551 or andrea.k.george@vanderbilt.edu or Johnny Vanderpool, Waste Collection Supervisor VEHS, at 3-4804 or johnny.vanderpool@vanderbilt.edu. Thank you for your cooperation in implementing this new procedure as soon as possible.

**AMENDMENT TO APPLICATION FOR USE OF RADIOACTIVE MATERIALS
Request to Generate Hazardous Scintillation Waste**

*This amendment form must be typed and a total of **four (4)** copies submitted to Vanderbilt Environmental Health & Safety (VEHS); keep one copy for your records. Contact VEHS if you need any assistance completing this form.*

- 1) Attach a memo from an administrator with budgetary authority in your department or division. The memo must state that your department or division will pay for the waste you generate as described in this application. **You will be charged \$100 per box of hazardous scintillation vials with half-lives less than 109 days and \$400 per box of hazardous scintillation vials with half-lives greater than 109 days (not including ³H and ¹⁴C with activities below 250 m mCi/box of 500 vials). You will be charged \$25 per gallon of bulk scintillation fluid with half-lives less than 109 days and \$160 per gallon for bulk scintillation fluid with half-lives greater than 109 days (not including ³H and ¹⁴C with activities below 0.05 m mCi/ml).**

2) Contact Information

PI Name		Phone	
Lab Contact Name		Phone	
Department or Division			
Administrator's Name		Phone	

3) Title and Number of Application Being Amended:

4) Description of Scintillation Waste

LSC Brand Name	Isotope	Half-life	Waste Volume & Activity Generated per Month (: Ci, boxes of vials and gallons of bulk fluid)

- 5) Statement of Amendment: *Describe in detail the reasons you need to generate this waste including the reason you cannot use non-hazardous scintillation fluid.*

_____ PI Signature

_____ Date