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SWAB REPORT # 628

SWAB DATE: 7 May 2012

*R/V Blue Heron* Radioisotope Van

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Distribution:  
SWAB Committee  
Doug Ricketts

## COMMENTS TO SWAB REPORTS

23 November 2010

Typical LSC instrument background values for  $^3\text{H}$  and  $^{14}\text{C}$  are 2 and 5 cpm, respectively. The LSC is a Tricarb 2910 TR with the low level counting option.

All samples are counted for 60 minutes, the instrument background is subtracted, and activities are reported in dpm/m<sup>2</sup>. Bucket blank activities are not subtracted. Counting errors (2 standard deviations) are also reported in dpm/m<sup>2</sup>. An error larger than the activity indicates that the activity is not significantly different from zero.

### Criteria for SWAB Results

Category	$^3\text{H}$ (dpm/m <sup>2</sup> )	$^{14}\text{C}$ (dpm m <sup>2</sup> )	Recommendations
A	<500	<50	No action
B*	500-10,000	50-10,000	Needs cleaning before any natural tracer work. Decks in radiation vans with activities above 1000 dpm/m <sup>2</sup> should be cleaned.
C**	10,000-100,000	10,000-50,000	Must be cleaned before any use.
D***	>100,000	>50,000	May be a health hazard. Notify local radiation safety official.

Note:  $^{14}\text{C}$  and  $^{35}\text{S}$  have peak energies of 156 and 167 KeV, respectively; thus  $^{35}\text{S}$  will be registered as  $^{14}\text{C}$  by our counting techniques. Categories A, B and C are not a health hazard.

### Recommended Cleaning Procedure

Wearing ordinary household rubber gloves:

$^3\text{H}$ : Wash and scrub with radioactive cleanup detergent such as COUNT-OFF (50 ml COUNT-OFF to 4 liters of water), using sponges to distribute solution and reabsorb it.

$^{14}\text{C}$ : Wash with 1% sulfuric or 2% hydrochloric (muriatic) acid with good ventilation (will dissolve carbonates, releasing  $^{14}\text{CO}_2$ ). Follow up with wash as if for  $^3\text{H}$ .

### Disposal of Cleaning Materials (gloves, sponges, etc)

Categories A & B dispose as ordinary garbage, C & D dispose in radiation waste system.

Note: If category C or D is encountered, we try to notify the insitution promptly by phone or email.

# REPORT FOR SWAB # 628

LOCATION: Duluth, MN  
VESSEL/LAB: *R/V Blue Heron*

DATE: 7 May 2012  
TECHNICIAN: Doug Ricketts

Sample #	Sample Identification	<sup>3</sup> H dpm/m <sup>2</sup>		<sup>14</sup> C dpm/m <sup>2</sup>	
		activity	error	activity	error
1	1st Vial Bkgnd	0	± 0	0	± 0
2	Initial bucket blank	62	± 53	0	± 0
3	Inside refrigerator	298	± 63	23	± 22
4	Work countertop	*4304	± 173	*147	± 19
5	Floor in front of refrigerator	*692	± 21	**14,857	± 208
6	Final bucket blank	53	± 47	0	± 0

## Comments

Please note that the error reported for each isotope is the two-standard deviation counting error.

In the radioisotope van, the work countertop showed moderate <sup>14</sup>C and <sup>3</sup>H contamination and the floor in front of the fridge has both <sup>14</sup>C and <sup>3</sup>H contamination. This needs to be cleaned before any use because it could be tracked into the ship.