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Tritium Laboratory
13 July 2012

SWAB REPORT # 638

SWAB DATE: 6 July 2012

R/V Endeavor

James D. Happell

Distribution:
SWAB Committee
William Fanning

COMMENTS TO SWAB REPORTS 23 November 2010

Typical LSC instrument background values for ^{3}H and ^{14}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^2. Bucket blank activities are not subtracted. Counting errors (2 standard deviations) are also reported in dpm/m^2. An error larger than the activity indicates that the activity is not significantly different from zero.

Criteria for SWAB Results

Category	^{3}H (dpm/m^2)	^{14}C (dpm m^2)	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/m2 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}C and ^{35}S have peak energies of 156 and 167 KeV, respectively; thus ^{35}S will be registered as ^{14}C by our counting techniques. Categories A, B and C are not a health hazard.

Recommended Cleaning Proceedure

Wearing ordinary household rubber gloves:

^{3}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}C: Wash with 1% sulfuric or 2% hydrochloric (muriatic) acid with good ventilation (will dissolve carbonates, releasing $^{14}CO_2$). Follow up with wash as if for ^{3}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 # 638

LOCATION: Gulfport, MS
VESSEL: *R/V Endeavor*

DATE: 6 July 2012
TECHNICIAN: Charlene Grall

Sample #	Sample Identification	^{3}H dpm/m^2 activity	^{3}H dpm/m^2 error	^{14}C dpm/m^2 activity	^{14}C dpm/m^2 error
1	1st Vial Bkgnd	0 ±	0	0 ±	0
2	Initial bucket blank	8 ±	0	0 ±	0
	Wet Lab (Figure 1)				
3	Deck inside port door	0 ±	0	0 ±	0
4	Deck inside aft door	3 ±	0	0 ±	0
5	Aft stbd workbench	41 ±	58	0 ±	0
6	Stbd sink area	0 ±	0	0 ±	0
7	Deck below fwd and stbd sink areas	5 ±	0	0 ±	0
	Special Purpose Labs (Figure 1)				
8	Inside fume hood	10 ±	117	0 ±	0
9	Deck in front of sink	0 ±	0	0 ±	0
10	Inside Thermo Scientific Freezer	32 ±	163	0 ±	0
11	Top of Kenmore chest freezer	20 ±	137	0 ±	0
12	Fwd bendchtop	5 ±	0	0 ±	0
13	Sink area	37 ±	55	0 ±	0
14	Deck inside entrance	22 ±	51	0 ±	0
	Galley/Mess (Figure 1)				
15	Deck infront of drink machine	29 ±	69	0 ±	0
16	Deck in front of serving line	4 ±	0	0 ±	0
17	Deck at entrance to Lounge	17 ±	49	0 ±	0
	Upper Lab (No Figure)				

18	Upper Lab Deck at top of stairs	3	±	0	0	± 0
19	Deck between aft entrance and Capt. stateroom	5	±	17	20	± 36
20	Companionway outside Electronics Repair	0	±	0	0	± 0
21	Deck in front of food freezer	24	±	560	0	± 0
Main Lab (Figure 2)						
22	Deck at top of aft stairs down	40	±	55	0	± 0
23	Deck beside aft sink	0	±	0	0	± 0
24	Port sink area	0	±	0	0	± 0
25	Deck in front of port sink	23	±	80	0	± 0
26	Middle benchtop near end	0	±	0	0	± 0
27	Deck between benches at midship	54	±	56	0	± 0

Sample #	Sample Identification	^{3}H dpm/m^{2} activity	error	^{14}C dpm/m^{2} activity	error
28	Deck at base of fwd stairs	0 ±	0	0 ±	0
29	Deck in companionway outside Lounge	4 ±	0	0 ±	0
Radioisotope Van (Figure 3)					
30	Inside fume hood	0 ±	0	42 ±	38
31	Benchtop adjacent to fume hood	26 ±	48	0 ±	0
32	Intermediate bucket blank	47 ±	74	0 ±	0
33	Benchtop adjacent to sink	6 ±	0	0 ±	0
34	Sink area	57 ±	55	0 ±	0
35	Top of LSC	29 ±	65	0 ±	0
36	Benchtop adjacent to LSC	28 ±	223	0 ±	0
37	Benchtop across from sink	52 ±	51	0 ±	0
38	Inside freezer	416 ±	68	36 ±	24
39	Inside refrigerator	124 ±	55	0 ±	0
40	Deck inside door near fume hood	*2209 ±	139	*106 ±	21
41	Deck below freezer & refrigerator	205 ±	47	*197 ±	41
42	Deck at entrance near sink	267	55	*309	46
43	Final bucket blank	38 ±	85	0 ±	0

Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. All areas tested on the ship were free of contamination. Radioisotope Van tested positive for minor ^{3}H and ^{14}C contamination. We recommend that the deck of van be cleaned to prevent tracking contamination into the ship.