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Tritium Laboratory
21 December 2012

SWAB REPORT # 664

SWAB DATE: 13 December 2012

R/V Kilo Moana

Dr. James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
Scott Ferguson

COMMENTS TO SWAB REPORTS

23 November 2010

Typical LSC instrument background values for ^3H 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	^3H (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/m^2 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 Procedure

Wearing ordinary household rubber gloves:

^3H : 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 $^{14}\text{CO}_2$). Follow up with wash as if for ^3H .

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 # 664

LOCATION: Honolulu, HI
VESSEL: R/V Kilo Moana

DATE: 13 December 2012
TECHNICIAN: Cecilia Roig

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
1	1st Vial Bkgnd	0	± 0	0	± 0
2	Initial bucket blank	21	± 101	0	± 0
	<u>Lab #2</u>				
3	Deck inside entrance	10	± 204	0	± 0
4	Aft sink area	37	± 74	0	± 0
5	Deck center of lab	29	± 86	0	± 0
6	Fwd. sink area	0	± 0	0	± 0
7	Port aft sink area	17	± 121	0	± 0
8	Port benchtop	13	± 0	0	± 0
9	Deck in front of fwd. sink	0	± 0	0	± 0
10	Deck in front of port aft sink area	0	± 0	0	± 0
	<u>Scientific Storage</u>				
11	Inside Cospolich # 1	110	± 57	0	± 0
12	Inside Cospolich # 2 top	84	± 56	0	± 0
13	Inside Cospolich # 2 bottom	27	± 86	0	± 0
14	Inside Cospolich # 3 top	59	± 73	0	± 0
15	Inside Cospolich # 3 bottom	24	± 71	0	± 0
16	Ice inside Thermo Sci.	3	± 0	0	± 0
	<u>Chemistry Lab</u>				
17	Inside fume hood	35	± 62	0	± 0
18	Fwd. sink area	37	± 60	0	± 0
19	Aft sink area	27	± 129	0	± 0
20	Deck inside entrance	4	± 0	0	± 0
21	Deck center of lab	60	± 63	0	± 0
22	Inside small Kenmore fridge	0	± 0	0	± 0
	<u>Lab #1</u>				
23	Deck inside aft entrance	44	± 70	0	± 0
24	Deck inside fwd. entrance	32	± 156	0	± 0
	<u>Hydro Lab</u>				
25	Center benchtop	18	± 21	*58	± 39

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
26	Deck stbd. of center benchtop	7	± 0	0	± 0
27	Deck at entrance	30	± 149	0	± 0
28	Aft benchtop	11	± 33	11	± 36
29	Stbd. benchtop	33	± 82	0	± 0
	<u>Wet Lab</u>				
30	Benchtop right of sink	21	± 80	0	± 0
31	Deck inside fwd. entrance	19	± 0	0	± 0
32	Deck center of lab	0	± 0	0	± 0
	<u>Miscellaneous Areas</u>				
33	Deck below drink machine	17	± 154	0	± 0
34	Deck inside Library	25	± 0	0	± 0
35	Deck in front of fountain	20	± 508	0	± 0
	<u>Clean Power Room</u>				
36	Deck inside door	37	± 65	0	± 0
37	Final bucket blank	6	± 0	0	± 0

Comments

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

All areas tested in the ship were free from ³H contamination that requires cleaning. Minor ¹⁴C contamination was detected in the Hydro Lab center benchtop, this area needs to be cleaned before any natural tracer work.

