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Tritium Laboratory
3 February 2017

SWAB REPORT #846

SWAB DATE: 29 January 2017

R/V Kilo Moana

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Distribution:
SWAB Committee
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COMMENTS TO SWAB REPORTS

12 May 2014

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 $1000 \text{ dpm}/\text{m}^2$ 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 contact your institution's radiation safety office.

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

REPORT FOR SWAB # 846

LOCATION: Honolulu, Hawaii
VESSEL/LAB: R/V Kilo Moana

DATE: 29 January 2017
TECHNICIAN: Jim Happell

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	24	± 47	-1	± 3
	<u>Chemistry Lab (Figure 1)</u>				
3	Forward sink area	0	± 2	13	± 38
4	Inside small Kenmore refrigerator	7	± 26	12	± 37
5	Inside fume hood	*3590	± 164	*51	± 9
6	Starboard benchtop next to fume hood	-4	± 49	17	± 39
7	Starboard benchtop forward section	24	± 42	7	± 32
8	Aft sink area	-4	± 54	18	± 39
9	Benchtop across from forward sink	3	± 13	19	± 38
10	Deck between aft sink and fume hood	-43	± 50	19	± 43
11	Deck at port entrance	18	± 34	14	± 35
	<u>Lab #1 (Figure 1)</u>				
12	Starboard benchtop	-10	± 0	11	± 40
13	Deck below aft sink	0	± 1	26	± 38
14	Deck at forward entrance	39	± 49	-1	± 29
	<u>Hydro Lab (Figure 1)</u>				
15	Aft sink area	-27	± 77	9	± 45
16	Starboard benchtop mid-section	14	± 41	3	± 30
17	Forward benchtop	4	± 109	-5	± 15
18	Port benchtop	-1	± 4	-1	± 4
19	Deck in front of forward bench	25	± 44	4	± 28
20	Deck inside port entrance	-35	± 41	25	± 41
	<u>Wet lab (Figure 1)</u>				
21	Sink area	5	± 34	4	± 35
22	Deck inside aft hanger door entrance	167	± 57	-1	± 5
23	Inside port fume hood	5	± 54	-2	± 6

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
<u>Scientific Storage Area (Figure 1)</u>					
24	Inside Cospolich refrigerator #1	27	± 60	-14	± 43
25	Inside Cospolich refrigerator #3	9	± 43	1	± 23
26	Inside Cospolich refrigerator #2	166	± 55	-2	± 8
27	Top of starboard GE chest freezer	16	± 109	-19	± 58
28	Top of center GE chest freezer	71	± 52	-4	± 12
29	Top of port GE chest freezer	19	± 56	-6	± 17
<u>Lab #2 (Figure 1)</u>					
30	Aft sink area	15	± 91	-15	± 46
31	Deck inside entrance	28	± 71	-20	± 60
32	Forward sink area	23	± 48	-2	± 7
33	Deck at bulkhead between lab spaces	174	± 59	-15	± 45
34	Port benchtop center section	-22	± 47	2	± 144
35	Port aft sink area	12	± 122	-17	± 50
36	Benchtop opposite of port aft sink	22	± 47	-1	± 4
37	Deck in front of port aft sink	50	± 59	-21	± 62
<u>01 Deck (No Figure)</u>					
38	Companionway inside exit to aft port weatherdeck	38	± 52	-7	± 20
39	Deck where rad van door opened	-2	± 57	9	± 38
40	Deck where HOTS van door opened	-14	± 32	-12	± 37
41	Companionway directly aft of vans	21	± 85	-21	± 62
<u>02 Deck (No Figure)</u>					
42	Deck at top of stairs to 02 deck	-11	± 25	-9	± 28
43	Starboard aft deck where incubators sat	11	± 45	0	± 19
44	Final bucket blank	27	± 63	-18	± 53
<u>Kilo Moana Rad Van (Figure 2)</u>					
45	Benchtop across from side entrance	31	± 54	-9	± 28
46	Benchtop adjacent to LSC	27	± 55	-9	± 26
47	Benchtop across from LSC	22	± 38	15	± 35
48	Benchtop adjacent to side entrance	61	± 65	-33	± 97
49	Inside fume hood	10	± 91	-11	± 32
50	Inside refrigerator across from LSC	370	± 28	*2422	± 91
51	Deck near side entrance	430	± 71	9	± 11
52	Deck near end entrance	470	± 73	29	± 21
53	Inside refrigerator adjacent to side door	76	± 47	13	± 29
54	Final bucket blank	31	± 67	-23	± 68

Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. The reports may now contain values less than zero. When decay counting background samples will be distributed about the background vial, which means that negative values are possible. In the past we rounded the negative values to zero. Values are only significantly above background when they are positive and larger than the error. The fume hood in the Chemistry Lab had minor ^3H and ^{14}C contamination. This hood should be cleaned before any further use. Minor ^{14}C contamination was found in the refrigerator across from the LSC in the Rad Van. No action is necessary in the Rad Van.

R/V KILO MOANA
RADIOISOTOPE VAN

