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Tritium Laboratory

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SWAB REPORT # 702

SWAB DATE: 20 October 2013

R/V N. B. Palmer

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Distribution:
SWAB Committee
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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 # 702

LOCATION: Punta Arenas, Chile
VESSEL: *R/V N. B. Palmer*

DATE: 20 October 2013
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 C. O. # 1	2	± 0	0	± 0
	<u>Aft Dry Lab (Figure 1)</u>				
3	Top of Revco chest freezer	0	± 0	0	± 0
4	Inside Fisher 00010623	12	± 0	0	± 0
5	Inside Thermo Scientific freezer	0	± 0	0	± 0
6	Inside Revco freezer 12063	0	± 0	0	± 0
7	Inside Percival incubator 00011176	0	± 0	0	± 0
8	Inside Fisher incubator 00113062	0	± 0	0	± 0
9	Deck in front of Fisher	0	± 0	0	± 0
10	Deck in front of freezers	0	± 0	0	± 0
11	Stbd bench top	0	± 0	0	± 0
12	Port sink area	7	± 0	0	± 0
13	Deck at forward door to passageway	0	± 0	0	± 0
14	Deck at aft door to passageway	0	± 0	0	± 0
15	Deck at aft door to Baltic Room	0	± 0	0	± 0
16	Aft sink area	20	± 104	0	± 0
17	Inside Percival incubator 00011175	0	± 0	0	± 0
	<u>Forward Dry Lab (Figure 2)</u>				
18	Deck inside forward Dry Lab	0	± 0	0	± 0
19	Deck inside door to passageway	0	± 0	2	± 0
	<u>Bio Lab (Figure 3)</u>				
20	Sink area inside fwd. cooler	0	± 0	0	± 0
21	Benchtop right of sink inside aft cooler	0	± 0	0	± 0
22	Inside aft fume hood	9	± 134	0	± 0
23	Inside fwd. fume hood	0	± 0	0	± 0
24	Port sink area	0	± 0	0	± 0
25	Deck in front of aft fume hood	0	± 0	0	± 0
26	Deck in front of fwd. fume hood	0	± 0	0	± 0
27	Deck inside fwd. entrance	0	± 0	0	± 0
28	Deck in front of port sink	21	± 409	0	± 0
29	Aft sink area	1	± 0	0	± 0

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
30	Inside Fisher 00011985	8	± 0	0	± 0
31	Inside Fisher 0001986	0	± 0	0	± 0
32	Deck in front of refrigerators	0	± 0	0	± 0
33	Deck inside door to passageway	15	± 619	0	± 0
34	Bench top aft of port sink	12	± 86	0	± 0
35	Bench forward of port sink	0	± 0	0	± 0
36	Benchtop port of aft sink	0	± 0	0	± 0
37	Benchtop next to forward entrance	30	± 102	0	± 0
38	Final bucket blank C. O. #1	0	± 0	0	± 0
39	Initial bucket blank C. O. #2	0	± 0	0	± 0
<u>Hydro Lab (Figure 4)</u>					
40	Inside Summit refrigerator	0	± 0	0	± 0
41	Inside Fisher refrigerator	0	± 0	0	± 0
42	Aft sink area	0	± 0	0	± 0
43	Stbd. sink area	0	± 0	0	± 0
44	Aft benchtop	5	± 0	0	± 0
45	Deck in front of aft sink	12	± 63	0	± 0
46	Deck in front of stbd. sink	0	± 0	0	± 0
47	Deck in front of refrigerators	5	± 0	0	± 0
<u>Wet Lab (Figure 5)</u>					
48	Forward benchtop	11	± 0	0	± 0
49	Deck inside fwd. door	0	± 0	0	± 0
50	Aft sink area	16	± 1413	0	± 0
51	Stbd. benchtop	0	± 0	0	± 0
52	Deck inside port door	0	± 0	0	± 0
53	Deck in center of lab	0	± 0	0	± 0
54	Deck inside stbd. doors	0	± 0	0	± 0
55	Aft benchtop	0	± 0	0	± 0
<u>Aquarium (Figure 6)</u>					
56	Deck outside aft entrance to Aquarium	13	± 0	0	± 0
57	Deck outside fwd. entrance to Aquarium	0	± 0	0	± 0
<u>02 Deck, Helo Pad (Figure 7)</u>					
58	Inside Baxter 00011923 top	6	± 0	0	± 0
59	Inside Baxter 00011923 bottom	0	± -2	*1,189	± 69
60	Deck in front of Baxter	5	± 0	0	± 0
61	Deck in front of sink	0	± 0	0	± 0

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
62	Deck in passageway	4	± 0	0	± 0
63	Deck outside passageway door	0	± 0	0	± 0
64	Deck outside stbd door	151	± 48	0	± 0
65	Final bucket blank C. O. #2	0	± 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 refrigerator on the 02 Deck, Cleaning of this refrigerator is required