

UNIVERSITY OF MIAMI

ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



Tritium Laboratory

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SWAB REPORT # 878

SWAB DATE: 26 October 2017

R/V Atlantic Explorer

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Distribution:
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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 institution promptly by phone or email.

REPORT FOR SWAB # 878

LOCATION: St. George, Bermuda
VESSEL: R/V *Atlantic Explorer*

DATE: 26 October 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	-2	±	19	-13	±	41
	<u>Main Lab (Figure 1)</u>						
3	Port sink area	-8	±	44	-8	±	26
4	Benchtop aft of sink	-6	±	53	24	±	39
5	Center benchtop	-12	±	18	-3	±	9
6	Deck inside forward entrance	-21	±	29	13	±	41
7	Deck between center and starboard benchtops	-10	±	56	3	±	45
8	Forward starboard benchtop	-9	±	50	-3	±	22
9	Deck in front of CTD bottle rack on aft bulkhead	10	±	52	-2	±	44
10	Deck in front of port sink	11	±	39	5	±	33
	<u>Forward Lab (Figure 1)</u>						
11	Port sink area	-5	±	43	2	±	44
12	Benchtop aft of sink	-1	±	9	19	±	38
13	Center benchtop	-15	±	22	16	±	40
14	Forward benchtop	20	±	29	33	±	37
15	Deck at forward entrance	-7	±	62	15	±	39
16	Deck at aft entrance	-22	±	106	30	±	34
17	Deck in front of port sink	11	±	33	11	±	36
18	Benchtop inside Enviro Room	-18	±	26	22	±	40
19	Deck in Enviro Room	28	±	44	7	±	31

Sample #	Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
		activity	error	activity	error
<u>Aft Lab (Figure 1)</u>					
20	Port sink area	40	± 65	-22	± 36
21	Benchtop forward of sink	1	± 33	1	± 35
22	Forward benchtop	-27	± 39	13	± 42
23	Center benchtop	-12	± 18	5	± 44
24	Inside fume hood	22	± 55	-5	± 31
25	Deck in front of fume hood	-32	± 45	20	± 41
26	Inside aft Cospolich refrigerator	22	± 58	-8	± 51
27	Inside forward Cospolich refrigerator	-3	± 12	28	± 38
28	Inside aft Cospolich freezer	20	± 43	9	± 34
29	Inside forward Cospolich freezer	-16	± 23	5	± 45
30	Deck inside forward entrance	8	± 42	3	± 33
31	Deck inside aft entrance	-16	± 22	15	± 40
32	Deck in front of port sink	12	± 21	38	± 38
33	Intermediate bucket blank	8	± 17	33	± 38
<u>Radioisotope Van 2409-01 (Figure 2)</u>					
34	Sink area	162	± 56	36	± 31
35	Benchtop across from sink	228	± 64	28	± 27
36	Inside fume hood	96	± 52	33	± 34
37	Top of LSC	288	± 66	44	± 29
38	Inside Danby refrigerator under sink	*1595	± 122	*55	± 17
39	Deck between LSC and hood	*2236	± 139	*84	± 18
40	Deck at entrance	*1615	± 123	*57	± 17
41	Deck outside van entrance on 01 Deck	43	39	36	36
42	Final bucket blank	-22	31	37	40

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. All areas tested on the ship were free from any isotope contamination that requires cleaning. Minor ^3H and ^{14}C contamination found in the Rad Van. No action is necessary in the Rad Van

SWAB #878

Figure 2

26 October 2017

UNOLS Shared Use Van 2409-01

