



Tritium Laboratory
10 November 2014

SWAB REPORT #748

SWAB DATE: 4 November 2014

R/V Hugh Sharp

James
Happell

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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 off

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

REPORT FOR SWAB # 748

LOCATION: Lewes, DE
VESSEL: *R/V Hugh Sharp*

DATE: 4 November 2014
TECHNICIAN: Yudy Mendoza

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
<u>Rad Van 625502.0 (Figure 1)</u>					
1	1st Vial Bkgnd	0	± 0	0	± 0
2	Initial bucket blank C.O. # 1	0	± 0	19	± 34
3	Benchtop left of sink	134	± 43	*72	± 32
4	Benchtop right of fume hood	192	± 50	*60	± 30
5	Inside fume hood	356	± 61	*61	± 27
6	Top of LSC	74	± 37	*64	± 33
7	Benchtop left of LSC	225	± 50	*113	± 34
8	Benchtop opposite of sink	98	± 40	*63	± 32
9	Inside refrigerator	219	± 20	*1856	± 79
10	Inside freezer	73	± 42	23	± 28
11	Deck in front of fume hood	*754	± 75	*320	± 40
12	Deck center of van	*2000	± 121	*430	± 40
13	Sink area	89	± 43	31	± 29
14	Deck in front of sink at van entrance	330	± 57	*138	± 34
<u>General Purpose Van, 240802.4 (Fig.2)</u>					
15	Inside fume hood	4	9	35	± 34
16	Benchtop adjacent to fume hood	*5055	± 166	*3807	± 105
17	Benchtop adjacent to sink	0	± 0	39	± 35
18	Benchtop opposite of small Danby	*4823	± 163	*3417	± 99
19	Benchtop opposite of sink	14	± 33	11	± 31
20	Inside small Kenmore	0	± 0	44	± 35
21	Inside small Danby	0	± 0	52	± 35
22	Deck at entrance in front of fume hood	*3026	± 140	*2073	± 80
23	Sink area	102	± 46	30	± 28
24	Benchtop next to fire extinguisher station	26	± 26	48	± 33
25	Deck in front of sink	410	± 58	*297	± 41
26	Intermediate bucket blank	24	± 51	0	± 0
<u>Main Lab (Figure 3)</u>					
27	Inside whirlpool freezer top	28	± 32	28	± 32
28	Inside whirlpool refrigerator bottom	0	± 0	25	± 34
29	Inside Holiday freezer	13	± 22	30	± 33
30	Top of Thermo freezer	57	± 44	7	± 22
31	Port benchtop across from freezers	8	± 23	16	± 32

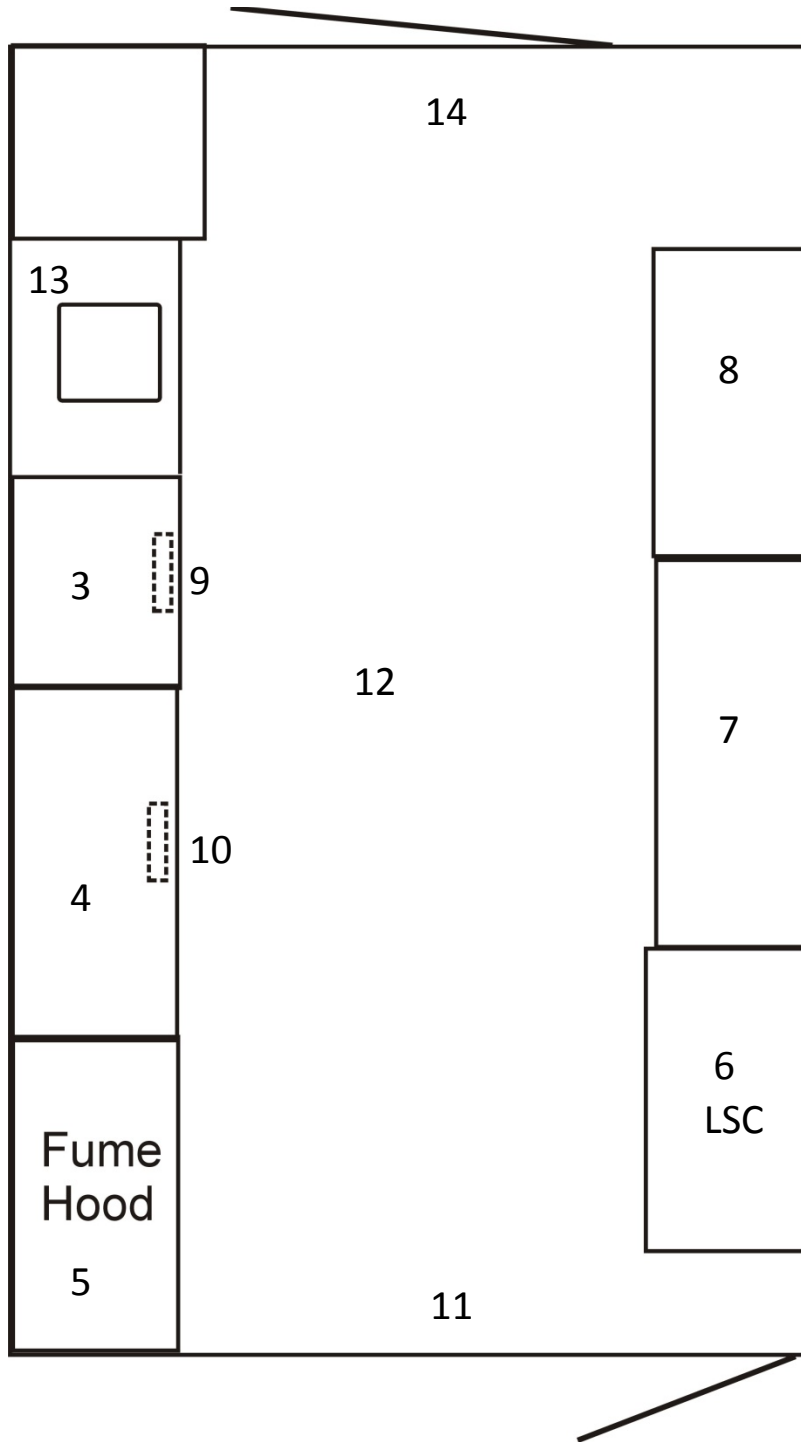
Sample #	Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
		activity	error	activity	error
32	Port benchtop across from Whirlpool	28	± 29	34	± 32
33	Forward starboard benchtop	14	± 35	8	± 30
34	Center starboard benchtop	46	± 40	17	± 29
35	Aft starboard benchtop	22	± 40	6	± 27
36	Aft benchtop across from spill control sta	4	± 17	13	± 32
37	Aft benchtop across from sink	9	± 24	17	± 32
38	Sink area	42	± 43	8	± 26
39	Deck below sink	92	± 38	*95	± 35
40	Deck at entrance to Wet Lab	74	± 43	49	± 32
41	Deck in front of freezers	94	± 39	*95	± 35
42	Deck between forward & aft port bench	166	± 48	*98	± 34
43	Deck between starboard & port bench	73	± 40	53	± 32
	<u>Wet Lab (Figure 3)</u>				
44	Final bucket blank C. O. # 1	0	± 0	14	± 35
45	Initial bucket blank C. O. # 2	1	± 6	17	± 33
46	Forward starboard benchtop near CTD	46	± 38	23	± 30
47	Deck at aft entrance	19	± 28	29	± 32
48	Deck in front of aft sink	75	± 45	22	± 28
49	Aft benchtops	30	± 39	12	± 29
50	Inside Whirlpool freezer	39	± 44	3	± 20
51	Inside Whirlpool fridge	75	± 41	35	± 30
52	Inside Holiday freezer	13	± 58	0	± 0
53	Final bucket blank C.O. # 2	0	± 0	27	± 34

Comments

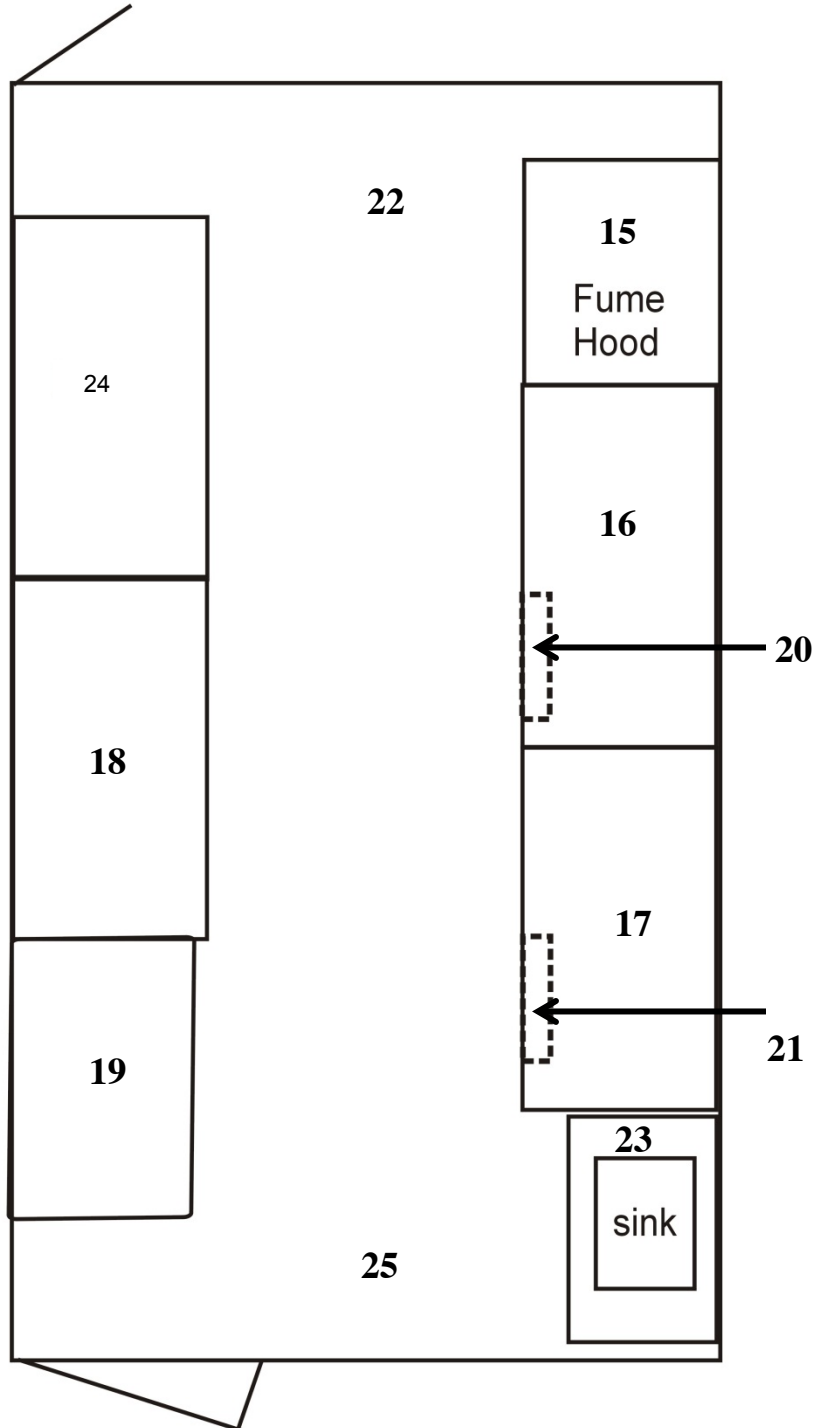
Please note that the error reported for each isotope is the two-standard deviation counting error. There appears to be minor ^3H and ^{14}C contamination in both the General Purpose and Rad Vans. However since radioactive isotopes were not used in the General Purpose Van we suspect these are again false positive results due to chemiluminescence in the samples which can cause the LSC to produce false positive results. We recounted samples #16 and 18 in our ^3H gas proportional counters, which are not effected by chemiluminescence, and values of 10 and 0 dpm/m² were obtained. We also recounted sample #12 from the Rad Van and we got 41 dpm/m². All three of these values are significantly less than those obtained when counting with the LSC indicating that some light producing compound is causing a false positive in the LSC. The Sharp also appears to have minor ^{14}C contamination, but again we suspect a false positive. Identifying and eliminating the source of this false positive is essential because it is becoming difficult to determine if the vans and ship have actual isotope contamination.

UNOLS Van 625502.0

SWAB #748
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Figure 1



UNOLS VAN 240802.4



RV High Sharp Lab Spaces

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Figure 3

