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10 September 2014

SWAB REPORT # 737

SWAB DATE: 4 September 2014

R/V Melville and SIO Van #12

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Distribution:
SWAB Committee
Gary Lain

COMMENTS TO SWAB REPORTS 12 May 2014

Typical LSC instrument background values for ^{3}H 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	^{3}H (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 Proceedure

Wearing ordinary household rubber gloves:

^{3}H: 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 $^{14}CO_2$). Follow up with wash as if for ^{3}H.

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 # 737

LOCATION: San Diego, CA
VESSEL/LAB: *R/V Melville*

DATE: 4 September 2014
TECHNICIAN: Charlene Grall

Sample #	Sample Identification	^{3}H dpm/m^{2} activity	±	error	^{14}C dpm/m^{2} activity	±	error
1	1st Vial Bkgnd	0	±	0	0	±	0
2	Initial bucket blank	74	±	47	8	±	23
	SIO Radiation Van #12 (Fig 1)						
3	Deck inside entrance close to sink	*1098	±	87	*663	±	52
4	Benchtop adjacent to fume hood	*1072	±	81	*847	±	57
5	Inside fume hood	429	±	63	*216	±	39
6	Sink area	286	±	29	*1304	±	69
7	Benchtop adjacent to sink	*588	±	74	*215	±	38
8	Benchtop adjacent to LSC	*1119	±	93	*306	±	39
9	Inside refrigertor	**12625	±	205	**33468	±	308
10	Inside freezer	**25403	±	450	*610	±	26
11	Deck in center of van	*1598	±	90	*2141	±	83
12	Deck inside clean area at entrance	*1083	±	88	*645	±	52
	Main Lab (Fig. 2)						
13	Aft deck port of aft sink	40	±	37	32	±	33
14	Aft deck at stair to below deck	5	±	13	30	±	35
15	Mid-deck port of -80 freezer	17	±	27	29	±	34
16	Deck between center workbenches	49	±	39	31	±	32
17	Center starboard benchtop	13	±	39	6	±	31
18	Deck below port sink	0	±	0	32	±	37
19	Forward deck in front of port comp monitors	6	±	33	5	±	32
20	Forward deck at companionway	31	±	55	0	±	0
21	Deck port of Flameable Storage Locker	53	±	53	0	±	0
	Analytical Lab (Fig. 2)						
22	Deck inside aft entrance	0	±	0	27	±	36
23	Benchtop across from sink	0	±	0	30	±	35
24	Deck in front of sink area	56	±	54	0	±	0
	Dark Room (Fig. 2)						
25	Deck below starboard sink	16	±	42	6	±	30
26	Deck outside port entrance	3	±	40	1	±	29
27	Benchtop opposite of sink	7	±	57	0	±	0
28	Starboard sink area	4	±	14	18	±	34

Sample #	Sample Identification	^{3}H dpm/m^{2} activity		error	^{14}C dpm/m^{2} activity		error
	Main Deck (Fig. 2)						
29	Port benchtop in Aft Hangar	26	±	76	0	±	0
30	Deck at aft entrance to main lab	20	±	29	29	±	34
31	Deck between port workbench and sink in aft hanger	27	±	31	32	±	34
32	Deck where rad van door located	88	±	38	*86	±	36
33	Dek aft of Rad Van where incubators stood	43	±	55	0	±	0
34	Deck inside stbd A-frame where rosette sat	15	±	52	1	±	14
35	Benchtop next to winch control room	1	±	11	10	±	34
36	Fume Hood in Analytical Lab	86	±	50	9	±	23
37	Final bucket blank (CO#1)	6	±	70	0	±	0
38	Initial bucket blank (CO#2)	0	±	0	12	±	36
	01 Deck (Fig. 2)						
39	Deck at top of stair in Upper Lab	8	±	30	9	±	33
40	Deck below desk in front of Map Board	32	±	49	0	±	0
41	Deck at aft entrance to lab	9	±	104	0	±	0
42	Companionway outside lounge	21	±	44	3	±	26
43	Companionway outside Ship Office	10	±	79	0	±	0
44	Final bucket blank (CO#2)	19	±	37	10	±	31

Comments

Please note that the error reported for each isotope is the two-standard deviation counting error.
All areas tested on the Melville were free from radioisotope activity that requires cleaning, except deck below Rad Van door. This area should be cleaned. Rad Van #12 had widespread minor to moderate ^{3}H and ^{14}C contamination. The refigerator and freezer need to be cleaned before any additional use. Deck areas should be cleaned to prevent tracking contamination out of the van.

SIO RADIOISOTOPE VAN #12

Figure 1
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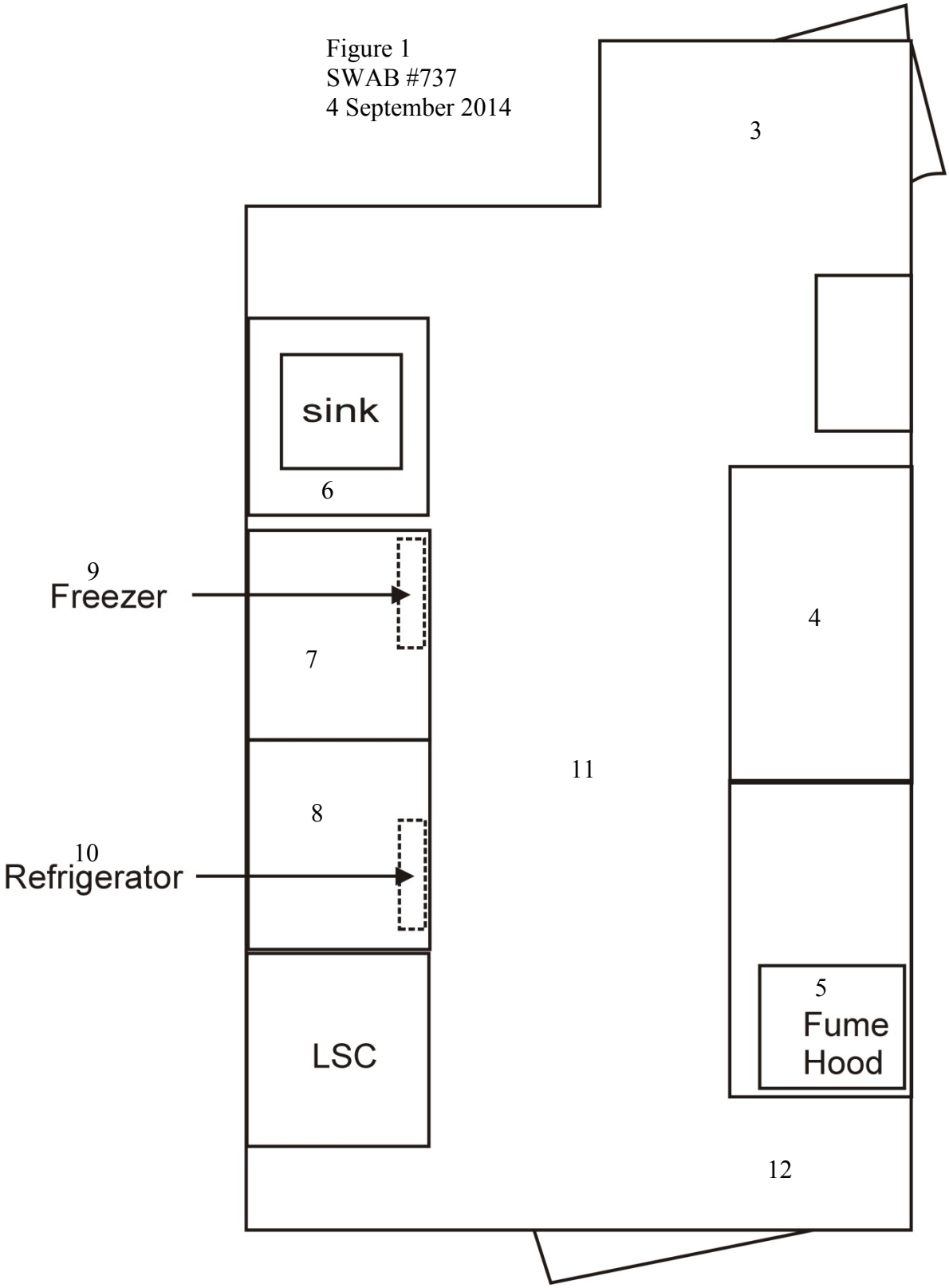

Figure 2
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R/V MELVILLE