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Tritium Laboratory

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SWAB REPORT # 954

SWAB DATE: 27 May 2019

R/V Laurence M. Gould and USAP Rad Van #4

Dr. James D. Happell
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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 #954

LOCATION: Punta Arenas, Chile
VESSEL: *R/V Laurence M Gould*

DATE: 27 May 2019
TECHNICIAN: L. Neidel

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	-35	± 232	*60	± 40
3	Hydro lab floor in front of starboard aft bench, middle	-46	± 302	*83	± 40
4	Wet lab floor in front of hard hat area near outer door	148	± 56	*71	± 35
5	Deck in front of Rad lab on hatch	-37	± 244	*83	± 40
<u>Rad Van #4 (Figure 1)</u>					
6	L side benchtop right	213	± 56	*146	± 39
7	L side benchtop middle	21	± 21	*76	± 39
8	L side benchtop left closest to LSC	0	± 1	*69	± 39
9	Hood inside	*1005	± 107	*61	± 22
10	R side benchtop right sink side	159	± 56	*76	± 36
11	R side benchtop middle	42	± 38	49	± 37
12	R side benchtop left	49	± 37	*66	± 37
13	Floor between hood and LSC	146	± 56	*64	± 35
14	Floor below sink	351	± 68	*145	± 37
15	Floor in middle	489	± 71	*291	± 43
16	Floor closest to refrigerator	*2029	± 138	*187	± 30
17	Floor entrance	283	± 55	*256	± 43
18	Floor under waste containers	*977	± 90	*578	± 51
19	Floor in front of utilities	410	± 75	*79	± 31
20	Floor in front of waste drums	87	± 43	*85	± 38
21	Shelf under Rside benchtop	486	± 79	*93	± 32
22	Shelf under L side benchtop	224	± 61	*84	± 35
23	Final bucket blank	-48	± 318	*53	± 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. It appears that the bucket was contaminated with a minor amount of ¹⁴C. The three samples taken from deck areas on the ship had minor ¹⁴C contamination. This could be due to the bucket contamination, but the areas should be cleaned regardless. Minor ³H and ¹⁴C contamination was found in Rad Van #4. No action is necessary in the van.

USAP Van # 4
Figure 1
SWAB #954
27 May 2019

