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Tritium Laboratory

24 July 2019

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SWAB REPORT # 953

SWAB DATE: 22 May 2019

Palmer Station Labs

Dr. James D. Happell
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Distribution:
SWAB Committee
Jamee Johnson
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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 # 909

LOCATION: Palmer Station, Antarctica
VESSEL: Palmer Station Rad Lab

DATE: 1 May 2018
TECHNICIANS: L. Neidel, J. Johnson

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
34 Initial bucket blank	8	± 491	-14	± 63
33 Floor in front of lab 4	3	± 11	-28	± 124
35 Lab 4 clean benchtop	40	± 49	3	± 23
36 Center of right benchtop	47	± 8	*734	± 60
37 Center of floor in front of left benchtop	71	± 26	*194	± 45
38 Left side of left benchtop	330	± 67	45	± 30
39 Right side of left benchtop	126	± 8	*4288	± 117
40 Center of floor in front of left benchtop	412	± 77	-16	± 122
41 Right side of floor in front of left benchtop	*615	± 84	*80	± 31
42 Fume hood inside bottom	172	± 38	*293	± 47
43 Dry lab debris inside of bin	*1678	± 126	42	± 14
44 Floor under dry lab debris bin	429	± 77	-19	± 178
45 Bucket blank 2	29	± 59	-9	± 64
46 Lab 10 floor in front of right bench	54	± 59	-12	± 87
47 Lab 3 floor in front of left bench	11	± 36	8	± 36
48 Lab 2 middle of left benchtop	-9	± 30	2	± 50
49 Lab 1 floor in front of back lab sink	12	± 77	-8	± 61
50 Lab 6 floor in front of +4 fridges	43	± 74	-27	± 119
51 Inside aquarium benchtop to right of main sink	-20	± 78	-14	± 102
52 Environmental Room 1, middle of right bench	18	± 71	-12	± 88
53 Final bucket blank	53	± 55	-22	± 98

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. Minor ^3H and ^{14}C contamination was found in several areas. These areas should be cleaned before any natural level isotope work is done. No action necessary if the samples are in the Rad Lab.