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Tritium Laboratory
16 May 2024

SWAB REPORT # 1090

SWAB DATE: 10 May 2024

R/V F.G. Walton Smith

James D. Happell

Distribution:
SWAB Committee
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COMMENTS TO SWAB REPORTS

15 December 2021

The LSC is now a Quantulus GCT 6220, with the SWAB counting assay having background cpm of 0.3 & 1.2 for ^3H & ^{14}C . This replaces an LSC with background cpm of 1.6 & 5.5 for ^3H & ^{14}C .

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. All activities significantly above background will be in **bold**.

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 # 1090

LOCATION: Miami, FL
VESSEL: *R/V F.G. Walton Smith*

DATE: 10 May 2024
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	Sample #6 from SWAB 1082	-6140	± 105	67404	± 344
3	Sample #18 from SWAB 1082	-57230	± 341	578905	± 984
4	Initial bucket blank	-6	± 15	32	± 11
5	Wet Lab deck port side	-1258	± 51	**12871	± 149
6	Wet Lab deck center	-5361	± 113	**47969	± 288
7	Wet Lab deck starboard side	-393	± 34	*3127	± 74

Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. Reports may now contain values less than zero. 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. Please note that we are now using a Quantulus 6220 LSC which counts very near natural background. While the cleanup standards have not changed all values above background will now be in bold. This SWAB was done to access cleanup efforts from the contamination found in SWAB 1082. Samples #6 and #18 from SWAB 1082 were recounted 67 days after they were first counted. This was done to assess whether the contamination was due to ³⁵S or ¹⁴C since ³⁵S (87.4 d) has a short half life compared to ¹⁴C (5730 y). If all of the original contamination was due to ³⁵S only, Samples #6 & #18 would have activities of 63488 and 570949 dpm/m², respectively. This suggests that ~ 95% of the original contamination was due to ³⁵S. The three Wetlab samples were collected on 5/10/2024, after several HCl and countoff cleanings. The highest activity is less than 10% of the expected activity, suggesting cleaning has helped. More cleaning is suggested to make sure that any ¹⁴C is removed.