UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE

Tritium Laboratory
4600 Rickenbacker Causeway
Miami, Florida 33149-1031

Ph: 305-421-4100
Fax:305-421-4112
E-mail: Tritium@rsmas.miami.edu

Tritium Laboratory
8 July 2024

SWAB REPORT #1098

SWAB DATE: June 28, 2024

R/V Kilo Moana

James Happell Digitally signed by James Happell
Date: 2024.07.08 11:11:02 -04'00'

James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
Craig Nosse
UH Marine Ops

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 ^{3}H & ^{14}C. This replaces an LSC with background cpm of 1.6 & 5.5 for ^{3}H & ^{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	^{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 # 1098

LOCATION: San Francisco, CA
VESSEL/LAB: *R/V Kilo Moana*

DATE: 28 June 2024
TECHNICIAN: Jim Happell

Sample #	Sample Identification	^{3}H dpm/m^{2}			^{14}C dpm/m^{2}		
		activity		**error**	**activity**		**error**
1	1st Vial Background	0	±	0	0	±	0
2	Initial bucket blank CO #1	**37**	±	**22**	-21	±	57
	Lab #1 (Figure 1)						
3	Deck inside aft entrance	**48**	±	**23**	-18	±	49
4	Deck inside forward entrance	**52**	±	**23**	-14	±	39
5	Starboard benchtop	***2144**	±	**128**	40	±	6
6	Port benchtop	**47**	±	**21**	-1	±	4
	Hydro Lab (Figure 1)						
7	Starboard benchtop below aft porthole	**41**	±	**22**	-18	±	48
8	Starboard benchtop below forward porthole	**60**	±	**23**	-5	±	14
9	Deck in front of starboard bench	**55**	±	**22**	3	±	7
10	Deck inside port entrance	**26**	±	**20**	-11	±	31
11	Aft benchtop	**51**	±	**22**	-9	±	23
12	Forward benchtop	**152**	±	**35**	-20	±	53
13	Aft sink area	**69**	±	**27**	-32	±	85
14	Port benchtop	**103**	±	**30**	-24	±	65
15	Forward benchtop next to Fire Station #17	**30**	±	**22**	-20	±	53
	Lab #2 (Figure 1)						
16	Port benchtop	**28**	±	**23**	-19	±	50
17	Deck in center of lab	**28**	±	**28**	-27	±	73
18	Aft sink and adjacent benchtop	**50**	±	**24**	-24	±	65
19	Starboard benchtop	**24**	±	**19**	-13	±	36
20	Forward benchtop on starboard side	**36**	±	**21**	-14	±	37
21	Forward benchtop on port side	4	±	18	-12	±	31
22	Forward sink and adjacent starboard benchtop	**31**	±	**19**	-8	±	21
23	Aft sink and adjacent port benchtop	6	±	8	9	±	14
24	Deck in front of forward sink	**22**	±	**13**	15	±	14
25	Deck in front of forward bench port of sink	**117**	±	**33**	-5	±	66
26	Forward benchtop	19	±	19	-13	±	36
27	Port bench under forward porthole	**36**	±	**20**	-11	±	29
28	Port bench under aft porthole	**127**	±	**32**	-5	±	47
29	Benchtop port of forward sink	11	±	48	-25	±	66

Sample #	Sample Identification	^{3}H dpm/m^{2} activity		error	^{14}C dpm/m^{2} activity		error
	Chemistry Lab (Figure 1)						
30	Forward section of starboard benchtop	**18**	±	**17**	-8	±	22
31	Aft section of starboard benchtop	3	±	11	-1	±	2
32	Inside fume hood	**29**	±	**24**	-24	±	63
33	Deck between port entrance & forward sink	**32**	±	**20**	-11	±	31
34	Center benchtop in front of aft sink	**45**	±	**22**	-15	±	40
35	Forward sink area	**45**	±	**22**	-9	±	25
36	Deck in front of fume hood	9	±	41	-22	±	58
37	Aft sink and adjacent benchtop	**39**	±	**23**	-21	±	57
38	Center benchtop opposite of forward sink FS1	**27**	±	**17**	-6	±	16
39	Forward benchtop between fume hood and sink	11	±	18	-9	±	24
40	Deck in front of aft sink	**21**	±	**18**	-9	±	24
	Wet Lab (Figure 1)						
41	Forward sink and adjacent benchtop	**32**	±	**19**	-8	±	21
42	Starboard benchtop	**28**	±	**24**	-22	±	59
43	Starboard side of forward benchtop	11	±	23	-13	±	36
44	Deck port of CTD	12	±	19	-9	±	23
	Science Storeroom (Figure 1)						
45	Inside Cospolich refrigerator #1	**36**	±	**19**	-7	±	19
46	Inside Cospolich refrigerator #2	**39**	±	**20**	-8	±	22
47	Inside Cospolich refrigerator #3	**33**	±	**23**	-23	±	61
48	Inside Cospolich freezer #2	1	±	5	-5	±	13
49	Inside Cospolich freezer #3	12	±	16	-9	±	24
50	Final bucket blank	10	±	42	-31	±	84

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. One areas of minor ^{3}H contamiantion was found in Lab #1. This benchtop should be cleaned.

Figure 1
SWAB # 1098
28 June 2024