



Tritium Laboratory  
28 October 2024

SWAB REPORT # 1106

SWAB DATE: 17 October 2024

*USAP Radiation Vans #2 and #4*

James Happell Digitally signed by James Happell  
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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  $^3\text{H}$  &  $^{14}\text{C}$ . This replaces an LSC with background cpm of 1.6 & 5.5 for  $^3\text{H}$  &  $^{14}\text{C}$ .

All samples are counted for 60 minutes, the instrument background is subtracted, and activities are reported in  $\text{dpm}/\text{m}^2$ . Bucket blank activities are not subtracted. Counting errors (2 standard deviations) are also reported in  $\text{dpm}/\text{m}^2$ . 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	$^3\text{H}$ ( $\text{dpm}/\text{m}^2$ )	$^{14}\text{C}$ ( $\text{dpm m}^2$ )	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:  $^{14}\text{C}$  and  $^{35}\text{S}$  have peak energies of 156 and 167 KeV, respectively; thus  $^{35}\text{S}$  will be registered as  $^{14}\text{C}$  by our counting techniques. Categories A, B and C are not a health hazard.

### Recommended Cleaning Procedure

Wearing ordinary household rubber gloves:

$^3\text{H}$ : 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.

$^{14}\text{C}$ : 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  $^3\text{H}$ .

### 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 institution promptly by phone or email.

REPORT FOR SWAB # 1106

LOCATION: Punta Arenas, Chile

DATE: 17 October 2024

VESSEL: *Rad Vans #2 and #4*

TECHNICIAN: Charlene Grall

Sample #	Sample Identification	<sup>3</sup> H dpm/m <sup>2</sup>		<sup>14</sup> C dpm/m <sup>2</sup>	
		activity	error	activity	error
1	1st Vial Bkgnd	0	± 0	0	± 0
2	Initial bucket blank	-10	± 12	3	± 15
<u>Radioisotope Van #2 (Figure 1)</u>					
3	Inside fume hood	15	± 18	11	± 12
4	Sink area and surrounding benchtop	13	± 16	15	± 13
5	Benchtop next to LSC	45	± 24	21	± 13
6	Deck in front of LSC	7	± 11	17	± 13
7	Inside Thermo Scientific refrigerator #00113237	131	± 35	23	± 11
8	Benchtop above refrigerator	-12	± 15	18	± 14
9	Waste collection area	4	± 6	22	± 14
10	Deck where water baths were located	18	± 17	21	± 13
11	Deck in center of van	22	± 18	24	± 13
12	Deck inside entrance	19	± 18	19	± 13
13	Benchtop across from entrance	35	± 22	18	± 13
<u>Radioisotope Van #4 (Figure 2)</u>					
14	Inside fume hood	218	± 44	20	± 9
15	Benchtop around sink area	186	± 42	4	± 4
16	Inside Thermo Scientific refrigerator	*2749	± 143	*105	± 10
17	Benchtop above refrigerator	90	± 32	15	± 11
18	Waste collection area	*4008	± 172	*123	± 10
19	Top of metal box next to waste collection area	100	± 33	11	± 9
20	Wooden benchtop next to LSC	25	± 21	15	± 12
21	Wooden benchtop next to entrance	20	± 30	-8	± 9
22	Deck in front of LSC and fume hood	140	± 37	26	± 12
23	Deck in center of van	187	± 41	32	± 12
24	Deck in front of metal box and waste area	67	± 30	8	± 9
25	Deck inside entrance	132	± 37	13	± 9
26	Final bucket blank	-2	± 3	0	± 1

### 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. Minor  $^3\text{H}$  and  $^{14}\text{C}$  contamination was found in Rad Van #4. No action is necessary.

Figure 1  
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17 October 2024

### USAP Van #2

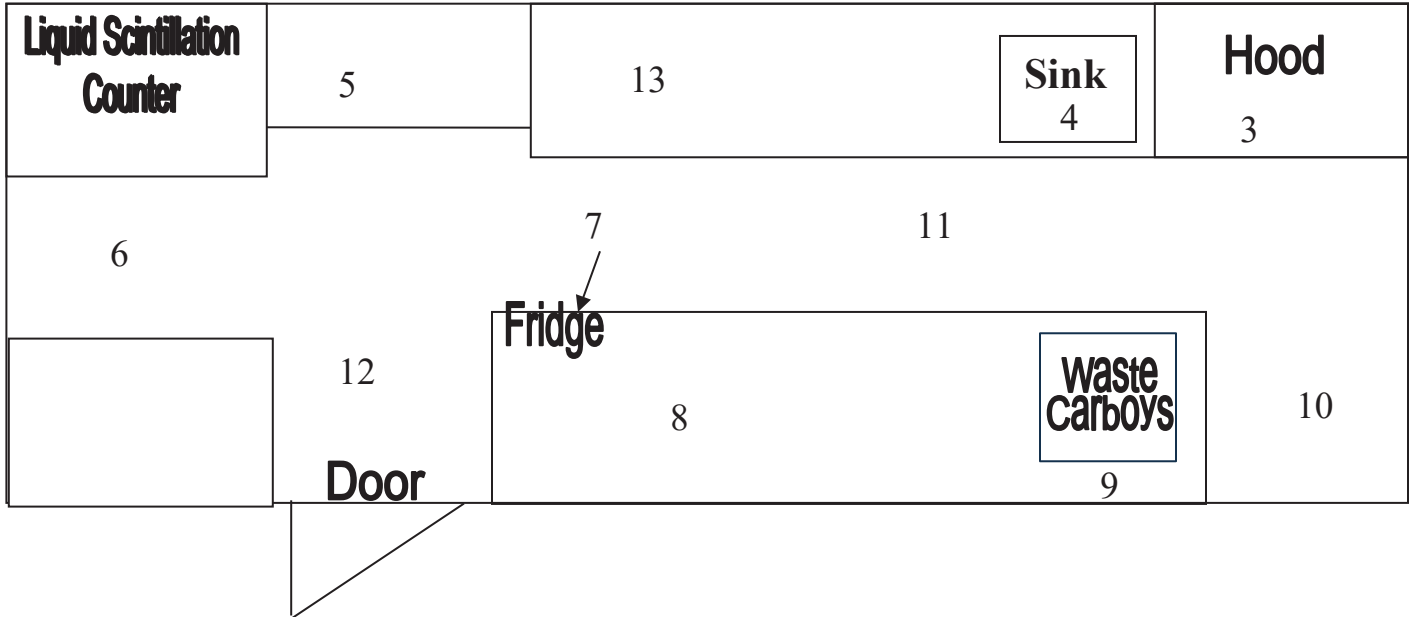


Figure 2  
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## USAP Van # 4

