



Tritium Laboratory
5 August 2025

SWAB REPORT # 1123

SWAB DATE: 21 July 2025

Western Colorado University

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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 ^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 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 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 # 1123

LOCATION: Gunnison , CO

DATE: 21 July 2025

VESSEL: Western Colorado University

TECHNICIAN: Phobe Roberts

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	6	±	8	-21	±	21
3 Hurst 141 bench	39	±	28	-32	±	33
4 Hurst 141-B bench dirt room	37	±	24	-16	±	17
5 Herbarium room	0	±	1	-19	±	19
6 Hurst 133-A bench	33	±	21	-7	±	10
7 Large distilled water carboy	14	±	20	-44	±	45
8 Small distilled water carboy	40	±	30	-39	±	40
9 Ultra pure water from squeeze bottle	68	±	28	-32	±	33
10 Precombusted beaker from 4/16	28	±	20	-9	±	13
11 Final bucket blank	7	±	9	-19	±	20

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. All areas sampled were free from isotope contamination that requires cleaning.