

Tritium Laboratory
11 March 2010



SWAB REPORT #535

SWAB DATE: 4 December 2009

*USCG POLAR SEA
And Polar Programs Radioisotope Van*

C14 Original and Rerun Results

A handwritten signature in black ink, appearing to read "James D. Happell". The signature is written over a horizontal line.

Dr. James D. Happell
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COMMENTS TO SWAB REPORTS

30 December 2008

Technical data below applies unless otherwise indicated.

Typical instrument background for tritium and C14: 7 and 15 cpm, respectively.

All data are means of at least three runs and are expressed in dpm/m² extracted; machine and wash solution blanks have been subtracted.

Typical error: 10% or 50 dpm/m², whichever is larger, for both tritium and C14.

Criteria for SWAB Results

Category	Tritium (dpm/m ²)	C14 (dpm/m ²)	Recommendations
A	< 500	< 50	No action
B *	500-10,000	50-10,000	Needs cleaning before <u>natural tracer</u> work. No health hazard. Does not apply to Radiation Vans
C **	10,000-100,000	10,000-50,000	Must be cleaned before any use. Includes Radiation Vans
D ***	>100,000	>50,000	May be a health hazard. Notify local Radiation Safety Official

Note: C14 and S35 have peak energies of 156 and 167 KeV, respectively; thus S35 will be registered as C14 by our counting techniques.

Recommended Cleaning Procedure

Wearing ordinary household rubber gloves:

Tritium: Wash and scrub with radioactive cleanup detergent such as COUNT-OFF (50 ml or 1/4 cup COUNT-OFF to 1 gallon of water), using sponges to distribute solution and reabsorb it.

C14: Wash with 1% sulfuric or 2% hydrochloric (muriatic) acid with good ventilation (will dissolve carbonates, releasing ¹⁴CO₂). Follow up with wash as if for tritium.

Disposal of Cleaning Materials (gloves, sponges, etc.)

Categories A and B: Dispose as ordinary garbage.
C and D: Dispose in radiation waste system.

Note: In case Category C or D is encountered, we try to notify the institution promptly by telephone.

REPORT FOR SWAB # 535
 C14 ORIGINAL AND RERUN RESULTS

LOCATION: Seattle, WA
 TECHNICIAN: Cecilia Roig
 VESSEL/LAB: USCG Polar Sea

DATE: 4 December 2009
 STATUS: See **Comments**

SAMPLE #	SAMPLE IDENTIFICATION	NET ACTIVITY EXTRACTED	
		14C dpm/m2 12/09 run	14C dpm/m2 3/10 run
1	Machine Blank	-	-
<u>Radioisotope Van</u>			
24	Inside hood	9,090*	4,864*
25	Bench top right of fume hood/above freezer	822*	457*
26	Bench top left of sink/above refrigerator	12,026**	6,842*
27	Sink area	2,705*	1,460*
28	Top of LSC	1,372*	738*
29	Bench top across from freezer/left of LSC	625*	331*
30	Bench top across sink	719*	312*
31	Deck at entrance next to hood	4,907*	2,855*
32	Inside freezer	245	141*
33	Inside refrigerator	4,274*	2,647*
34	Deck center of van	4,198*	2,592*
35	Deck at entrance next to sink	4,101*	2,343*

Comments

This cruise used both 35S and 14C and our LSC technique counts 35S as 14C. Therefore there was some question as to which isotope was responsible for the observed 14C contamination. One way to distinguish between the two isotopes is to rerun the samples after ~90 days to see if and how much the activity decreased. If the contamination was due to mainly 35S as opposed to 14C the activity should decrease by about 50% over 90 days since the half life of 35S is 87.4 days. The 90 day results show that all of the observed van contamination does appear to be 35S rather than 14C.