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Tritium Laboratory
14 September 2021

SWAB REPORT # 1012

SWAB DATE: 1 September 2021

University of Delaware Walter Labs

James Happell Digitally signed by James Happell Date: 2021.09.14 10:50:29 -04'00'

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Associate Research Professor

Distribution:
SWAB Committee
Sunita Walter
Justin Guider

COMMENTS TO SWAB REPORTS 12 May 2014

Typical LSC instrument background values for ^{3}H and ^{14}C are 2 and 5 cpm, respectively. The LSC is a Tricarb 2910 TR with the low level counting option.

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.

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 # 1012

LOCATION: Lewes, DE
VESSEL: Sunita Walter Labs

DATE: 1 September 2021
TECHNICIAN: Justin Guider

Sample #	Sample Identification	^{3}H dpm/m^{2} activity		^{3}H dpm/m^{2} error	^{14}C dpm/m^{2} activity		^{14}C dpm/m^{2} error
1	1st Vial Background	0	±	0	0	±	0
2	Initial bucket blank	-2	±	8	-1	±	19
3	125 Big hood counter	-47	±	57	5	±	83
4	125 Small hood	-75	±	90	6	±	103
5	125 Sink area - inside sink handles tube	-48	±	58	-3	±	48
6	125 Around both sides of sink	-25	±	31	-8	±	43
7	125 a QTCF and desk and handles	-40	±	48	-4	±	71
8	125 Door and cabinet handles	8	±	38	7	±	34
9	125 Cart	-86	±	104	19	±	48
10	125 Island	-43	±	52	8	±	50
11	127 General knobs and counters	-52	±	63	23	±	42
12	127 Autoclave and table	-60	±	72	12	±	48
13	127 Fridge handles and combustible oven	-58	±	70	11	±	50
14	Sorvall centrifuge	-39	±	47	25	±	40
15	Biddle Work areas	-3	±	13	2	±	40
16	Biddle Office space	-85	±	103	18	±	49
17	Biddle High danger areas	71	±	56	22	±	32
18	Biddle Lab handles and office handle	-48	±	57	8	±	53
19	Isotope Lab Billups side counters	-86	±	103	10	±	63
20	Isotope Lab Counters our side	-165	±	199	18	±	69
29	Final bucket blank	-37	±	45	-5	±	27

Comments

Please note that the error reported for each isotope is the two-standard deviation counting error. The reports may now contain values less than zero. When 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 positive and larger than the error. All areas tested were free from isotope contamination that requires cleaning.

Sampling more than one surface with one sponge is highly discouraged. If a sample indicates contamination there is no way to know which of the surfaces is contaminated, and contamination could be spread to