University of Ottawa, OCRO

RECORD OF CONTAMINATION MONITORING MONTHLY LOG

Wipe test by using a liquid scintillation counter or gamma counter:

Class Radionuclide	Radioisotope			CNSC Limits (Bq/cm²)	% Efficiency				cpm			Make	Model	Serial#
A														
B														
C														
Laboratory practices	For all Classes is _____ Bq/cm²													

Using a contamination meter:

Class Radionuclide	Radioisotope			CNSC Limits (Bq/cm²)	% Efficiency				cpm			Make	Model	Serial#
A														
B														
C														
Laboratory practices	For all Classes is _____ Bq/cm²													

Monitoring after decontamination is required and must be documented below. Record results in the table below and keep a copy in the binder.

For Basic Level laboratories, contamination monitoring must be conducted **weekly** where radioisotopes have been used during the previous seven calendar days. Wipe testing is required when monitoring for H-3, C-14, or S-35, etc. Otherwise, an appropriate survey meter may be used. A laboratory map/layout must be drawn and referencing radioisotope use areas. Updating of laboratory map/layout is required when use locations have changed. Contamination monitoring result must be documented in the unit of **Bq/cm²** – *please see Appendix on reverse side for instructions and fill out the below table as sample calculation*)

Bq/cm²	Meter (cpm)	Wipe test (cpm)
3		
1		
0.3		
0.1		

DATE: (month/year)		METHOD OF MONITORING:		☐ Survey Meter	☐ Wipe-Test

	BACK-GROUND	AREA 1 (Bq/cm²)	AREA 2 (Bq/cm²)	AREA 3 (Bq/cm²)	AREA 4 (Bq/cm²)	AREA 5 (Bq/cm²)	AREA 6 (Bq/cm²)	AREA 7 (Bq/cm²)	AREA 8 (Bq/cm²)	AREA 9 (Bq/cm²)	AREA 10 (Bq/cm²)	AREA 11 (Bq/cm²)	AREA 12 (Bq/cm²)	AREA 13 (Bq/cm²)	AREA 14 (Bq/cm²)
Week 1															
Week 2															
Week 3															
Week 4															
POST-DECONTAMINATION RESULTS															
Week 1															
Week 2															
Week 3															
Week 4															

Appendix: 3 easy steps to convert counts per minute (CPM) to Becquerel per centimeter squared (Bq/cm^2)

Step 1: Determine the Radionuclide Class

The CNSC has grouped radionuclide into 3 classes. The 3 classes are shown below:

Class A Radionuclide:
Cs-134, Cs-137, Na-22, Po-210, U-235, U-238

Class B Radionuclide: are long-lived or emit beta or gamma radiation
Co-58, Sr- 90, Y-90

Class C Radionuclide: are short-lived and emit beta or gamma radiation
C-14, Ca-45, Cl-36, Cr-51, Fe-55, H3, I-125, Ni-63, P32, P-33, S-35, Tc-99, Tc-99m

Step 2: Determine the regulatory limit

Each of these has limits assigned in terms of unfixed contamination in either a radioactive use or storage area, or in an area where radioactive material is used.

Non - Fixed Contamination	Class A radionuclide	Class B radionuclide	Class C radionuclide
in all areas, rooms or enclosures where unsealed nuclear substances are used, or stored	3 Bq/cm^2	30 Bq/cm^2	300 Bq/cm^2
in all other areas and packaging	0.3 Bq/cm^2	3 Bq/cm^2	30 Bq/cm^2

Step 3: Convert CPM to Bq/cm^2

The readings from contamination meters and non-portable instruments are related to regulatory criteria if the efficiency of the instrument for a specific radioisotope is known. Instrument efficiencies for specific radioisotopes can be obtained from the manufacturer or determined using an appropriate standard of known activity.

How is 'Becquerel per centimeter squared' calculated when using a Liquid Scintillation Counter/Gamma Counter (wipe testing)?

Result in Bq/cm^2 = (Reading in cpm – bkg) / (E_c x E_w x 60 x A)

where   bkg = counts per minute of the background,
E_c = counter efficiency (refer to vendor's manual),
E_w = wipe efficiency, assume 10% (0.1), and
A = area wiped in cm^2.

How is 'Becquerel per centimeter squared' calculated when from CPM when using a survey meter?

Result in Bq/cm^2 = (Reading cpm – bkg) / (E_c x 60 x A)

where   bkg = counts per minute of the background,
E_c = survey meter efficiency (refer to vendor's manual), and
A = area wiped in cm^2 (19.6 cm^2 for a pancake probe).