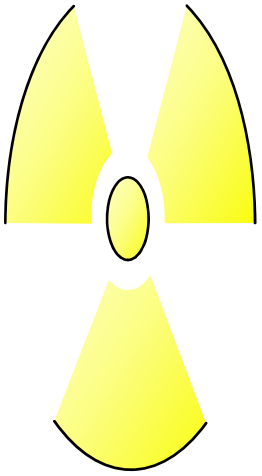
Irradiator Technology
H-315

Session 14

Wipe Test

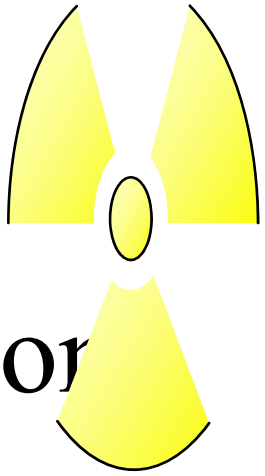
Underwater Sources

Contamination vs Radiation



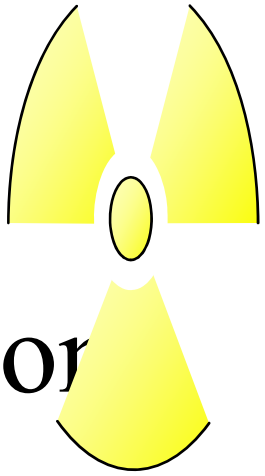
Radiation and Contamination are often confused. Radiation is energy, while contamination is the physical presence of a (radioactive) material on something.

So, you may have contamination on your shoe, but not radiation.



Units of Contamination

Contamination, or the presence of radioactive material on something is measured as count on a detector per some time like a minute (cpm), or by the actual decay rate (dps).



Units of Contamination

Detectors used to measure contamination need to be specifically calibrated for the Isotope & geometry.

Typically our Bicron Surveyor 2000 with the pancake probe reads 1100 cpm for

185 Bq (.005 Micro Curies of Cobalt 60)

ROUTINE WIPE TEST FOR CONTAMINATION FORM

447 March Road, Kanata, Ontario, Canada K2K 1X8. Telephone: (613) 592-2790 Telefax: (613) 591-6815

Customer Information

PS No. _____ Customer' Name _____ Customer's Location _____

Contact Person _____ Telephone Number _____ AECB License No. _____ (Canada Only)

Irradiator Type and Radiation Source Characteristics *Note: Initial all boxes*

Irradiator Type:_____ (e.g. JS-8900, GC-3000) Serial Number _____ Radiation Source Type: ^{60}Co ☐, or ^{137}Cs ☐

Wipe Test Details

Wipe Test Performed on: ☐ Surface of Transport Package, ☐ Underwater Source , ☐ Source Handling Tools
☐ GC1000/GC3000/GC40/GC220, ☐ Plug and Cavity of Transport Package
☐ Other:_____ (Specify)

Nordion Wipe Test Procedure Followed (see reverse side):_____ (give procedure number)

Description of Procedure Used: Initial One or more: ☐ J-Cloth; ☐ Filter Paper; ☐ Styrofoam ; ☐ Other: _____
Initial One or more: ☐ Wet Wipe; ☐ Dry Wipe; ☐ Other: _____

Survey Meter Details and Measurement Results

Survey Meter Make and Model: ☐ Bicron Surveyor 2000, ☐ Other _____ (Specify)
Survey Meter S.N.:_____ Calibration Expiry Date:_____

Instrument Conversion Factor: _____ cpm = 5 nCi (185 Bq) for ^{60}Co (see SERA-OP-001-013 F01), or

_____ cpm = 5 nCi (185 Bq) for ^{137}Cs (see SERA-OP-001-013 F01)

Background Reading: _____ cpm (A)
Gross Wipe Reading: _____ cpm (B)
Net Wipe Reading: _____ cpm (C) = (B) - (A). Choose the calculation I, or II.

(I) Measured Removable Contamination = $\frac{\text{Net Wipe Reading (cpm) x 5 nCi}}{\text{\_ \_ \_ \_ \_ \_ cpm}}$ =_ _ _ _ nCi Cobalt – 60

(II) Measured Removable Contamination = $\frac{\text{Net Wipe Reading (cpm) x 5 nCi}}{\text{\_ \_ \_ \_ \_ \_ cpm}}$ =_ _ _ _ nCi Cesium – 137

Wipe Test Results: ☐ Negative. Contamination < 5 nCi. No further action is required. Retain all wipes for further testing .
☐ Positive. Contamination ≥ 5 nCi. Outline initial corrective action on this form. Follow relevant SOP.

Wipe Test Performed by and Result Certified by _____ (Name) _____ (Signature)

_____ (Title) _____ (Date)

For Internal Use Only

Measurement Result Confirmed by _____ (Name) _____ (Signature)

Measurement Result Confirmed on _____ (Date)

ROUTINE WIPE TEST FOR CONTAMINATION FORM

Outline Initial Corrective Action (if required):

Corrective Action Taken by _____ (Name) _____ (Signature)

Corrective Action Performed on _____ (Date)

Referenced Standard Operating Procedures and Information Documents

1. IN/OP 0273 Co60, Routine Wipe Test for the Detection of Radioactive Contamination for Submerged Cobalt 60 Source Assemblies

2. IN/OP 0274 F000, Underwater Transport Package Unload Procedure

3. IN/OP 0275 F000, Underwater Transport Package Load Procedure

4. IN/OP 0276 CO60, Source Holder Load Procedure for a Wet Storage Irradiator

5. IN/IM 0278 A000, Routine Wipe Test for ANSI Category I and II Irradiators (^{60}Co and ^{137}Cs)

6. IN/OP 0293 F000, Routine Wipe Test for the Detection of Radioactive Surface Contamination for a Type B(U) Transport Package

7. IN/DS 1093 Z000, Information Document on Survey Meters use by Nordion's Installation and Service Group

8. SERA-OP-001-013, Calibration of a Detection System for the Measurement of Loose Contamination on Swipe