



VARSKIN 6



- An algorithm to compute ionizing dose to the skin following radiological contamination
- Photon dosimetry
 - attenuation, buildup, electron scatter
- Electron dosimetry
 - Bragg energy loss, backscatter
- The code agrees well with the EGSnrc probabilistic transport code

VARSKIN Use

- Used by NRC Staff and Licensees
- To show compliance with 10 CFR 20.1201(c) (or ICRP recommendations)
- As stated therein, the shallow dose equivalent to skin is calculated at the location receiving the highest dose within a 10 cm² (or 1 cm²) area at a tissue depth of 70 microns
- Various tissue depths and dose-averaging areas are possible

VARSKIN Methods

- Data entry is condensed to a single screen
 - includes specification of source geometry, nuclide(s), source strength, tissue depth, and protective clothing characteristics
- A point-kernel deterministic model is used for both photon and electron dosimetry
- Electron source term considers beta or positron emissions, with internal conversion and Auger electrons

VARSKIN Outputs

VG

Non Volume Averaged Results

Radionuclide: Activity


Cs-137 [7.42] 107D: 1.00E+00 µCi

All Radionuclides


Unit Selection

☐ English Units

☒ SI Units

VARSKIN

	Initial Dose Rate	Dose (No Decay)	Decay-Corrected Dose
Electron	2.55E-03 rad/h	2.55E-03 rad	2.55E-03 rad
Photon	4.99E-03 rad/h	4.99E-03 rad	4.99E-03 rad
Total	7.54E-03 rad/h	7.54E-03 rad	7.54E-03 rad

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Date/Time3/19/18 11:29:50 AM

Source GeometryDisk Source

Source Diameter1.00E+00 mm

Source Area7.85E-01 mm²

Cover Thickness5.20E-02 cm

Cover Density3.90E+00 g/cm³

Air Gap Thickness0.00E+00 mm

Irradiation Time6.00E+01 min

Irradiation Area1.00E+01 cm²

Print Results

Close



VARSKIN Information

- Current version is VARSKIN 6.0
- User's Group has ~350 members
 - <http://www.usnrc-ramp.com/content/varskin-overview>
- Our wish list includes:
 - User's Group technical conference
 - Web-based use
 - Injected-source scenario
 - Sensitivity/uncertainty methods
 - User entered mono-energetic source emissions