

## APPENDIX U – NRC Acceptable Surface Contamination Levels

Nuclide <sup>a</sup>	Removable <sup>b,e,f</sup> (dpm/100 cm <sup>2</sup> )	Average <sup>b,c,f</sup> (dpm/100 cm <sup>2</sup> )	Maximum <sup>b,d,f</sup> (dpm/100 cm <sup>2</sup> )
U <sub>Nat</sub> , U-235, U-238, and associated decay products	1000 α	5000 α	15000 α
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, and I-129	20	100	300
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-133, and I-131	200	1000	3000
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above	1000 βγ	5000 βγ	15000 βγ

<sup>a</sup> Where surface contamination by both alpha and beta-gamma emitting nuclide exists, the limits established for alpha and beta-gamma emitting nuclide should apply independently.

<sup>b</sup> As used in this table, dpm means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

<sup>c</sup> Measurements of average contaminant should not be averaged over more than 1 m<sup>2</sup>. For objects of less surface area, the average should be derived for each such object.

<sup>d</sup> The maximum contamination level applies to an area of not more than 100 cm<sup>2</sup>.

<sup>e</sup> The amount of removable radioactive material per 100 cm<sup>2</sup> of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

<sup>f</sup> The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 millirad per hour (mrad/hr) at 1 cm and 1.0 mrad/hr at 1 cm, respectively, measured through not more than 7 mg/cm<sup>2</sup> total absorber. The external gamma exposure rate should not exceed 5 microrentgen per hour above background at 1 meter from the surface and for soil 10 microrentgen per hour, above background at 1 meter.

### References:

1. U.S. Nuclear Regulatory Commission, Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproducts, Source, or Special Nuclear Material, April 1993.
2. U.S. Nuclear Regulatory Commission, Guidelines for the Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Byproduct, Source, or Special Nuclear Material Licenses, Policy and Guidance Directive FC 83-23, November 1983.
3. U.S. Atomic Energy Commission, Termination of Operating Licenses for Nuclear Reactors, Regulatory Guide 1.86, June 1974.