

Figure: 25 TAC §289.202(ggg)(6)

NUCLIDE ¹	AVERAGE ^{2, 3, 6}	MAXIMUM ^{2, 4, 6}	REMOVABLE ^{2, 3, 5, 6}
U-nat, U-235, U-238, and associated decay products	5,000 dpm	15,000 dpm	1,000 dpm
Transuranics, I-125, I-129, Ra-228, Pa-231, Ac-227, Th-230, Th-228, Ra-226	100 dpm	300 dpm	20 dpm
I-126, I-131, I-133, Ra-223, Ra-224, Sr-90, U-232, Th-nat, Th-232	1,000 dpm	3,000 dpm	200 dpm
Other alpha emitters ¹	500 dpm	1,500 dpm	100 dpm
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except those noted above	5,000 dpm	15,000 dpm	1,000 dpm
Tritium (applicable to surface and subsurface) ⁷	NA	NA	10,000 dpm

¹ Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting radionuclides are applied independently.

² As used in this table, disintegrations per minute (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.

³ Measurements of average contamination level should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each object.

⁴ The maximum contamination level applies to an area of not more than 100 cm².

⁵ The amount of removable radioactive material per 100 cm² of surface area shall 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 shall be reduced proportionally, and the entire surface shall be wiped.

⁶ The radiation levels associated with surface contamination resulting from beta-gamma emitters shall not exceed 0.2 millirad per hour (mrad/hr) at 1 centimeter for an average and shall not exceed 1.0 mrad/hr at 1 centimeter as a maximum, as measured through not more than 7 mg/cm² of total absorber. The external gamma exposure rate shall not exceed 5 microrentgen/hr above background at 1 meter from the surface, and for soil, 10 microrentgen/hr above background at 1 meter.

⁷ Property recently exposed or decontaminated shall have measurements (smears) at regular time intervals to ensure that there is not a build-up of contamination over time. Because tritium typically penetrates material it contacts, the surface guidelines in group five are not applicable to tritium. The department has reviewed the analysis conducted by the Department of Energy Tritium Surface Contamination Limits Committee ("Recommended Tritium Surface Contamination Release Guides," February 1991), and has assessed potential doses associated with the release of property containing residual tritium. The department recommends the use of the stated guideline as an interim value for removable tritium. Measurements demonstrating compliance of the removable fraction of tritium on surfaces with this guideline are acceptable to ensure that non-removable fractions and residual tritium in mass will not cause exposures that exceed dose limits as specified in this section and department constraints.

NUCLIDE ^a	AVERAGE ^{bef}	MAXIMUM ^{bdf}	REMOVABLE ^{beef}
U-nat, U-235, U-238, and associated decay products except Ra-226, Th-230, Ac-227, and Pa-231	5,000 dpm alpha/ 100 cm ²	15,000 dpm alpha/ 100 cm ²	1,000 dpm alpha/ 100 cm ²
Transuranics, Ra-223, Ra-224, Ra-226, Ra-228, Th-nat, Th-228, Th-230, Th-232, U-232, Pa-231, Ac-227, Sr-90, I-129	1,000 dpm/100- cm ²	3,000 dpm/100- cm ²	200 dpm/100 cm ²
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above	5,000 dpm beta, gamma/100 cm ²	15,000 dpm beta, gamma/100 cm ²	1,000 dpm beta, M- gamma/100 cm ²
Tritium (applicable to surface and subsurface) ^e	NA	NA	10,000 dpm/100 cm ²

^a ~~Where surface contamination by both alpha and beta-gamma emitting nuclides exists, the limits established for alpha and beta-gamma emitting nuclides shall apply independently.~~

^b ~~As used in this table, dpm (disintegrations per minute) 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.~~

^c ~~Measurements of average contamination level should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each object.~~

^d ~~The maximum contamination level applies to an area of not more than 100 cm².~~

^e ~~The amount of removable radioactive material per 100 cm² of surface area shall 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 shall be reduced proportionally and the entire surface shall be wiped.~~

~~f The radiation levels associated with surface contamination resulting from beta gamma emitters shall not exceed 0.2 mrad/hr at 1 centimeter for an average and shall not exceed 1.0 mrad/hr at 1 centimeter as a maximum, as measured through not more than 7 mg/cm² of total absorber. The external gamma exposure rate shall not exceed 5 microentgen per hour above background at 1 meter from the surface, and for soil 10 microentgen per hour above background at 1 meter.~~

~~g Property recently exposed or decontaminated, shall have measurements (smears) at regular time intervals to ensure that there is not a build-up of contamination over time. Because tritium typically penetrates material it contacts, the surface guidelines in group 4 are not applicable to tritium. The agency has reviewed the analysis conducted by the Department of Energy Tritium Surface Contamination Limits Committee ("Recommended Tritium Surface Contamination Release Guides," February 1991), and has assessed potential doses associated with the release of property containing residual tritium. The agency recommends the use of the stated guideline as an interim value for removable tritium. Measurements demonstrating compliance of the removable fraction of tritium on surfaces with this guideline are acceptable to ensure that non-removable fractions and residual tritium in mass will not cause exposures that exceed dose limits as specified in this section and agency constraints.~~