Príloha č. 5

k zákonu č. …/2017 Z. z.

**Uvádzanie rádionuklidov do životného prostredia A VYNÁŠANIE PREDMETOV Z KONTROLOVAnÉHO PÁSMA**

**Oslobodzovacie úrovne, uvoľňovacie úrovne, úrovne aktivity vymedzujúce vysokoaktívny žiarič a najvyššie prípustné hodnoty povrchovej rádioaktívnej kontaminácie na pracovisku so zdrojmi ionizujúceho žiarenia**

1. **Všeobecné kritéria na uplatňovanie oslobodzovacích úrovní a uvoľňovacích úrovní**
2. Ak to povrch rádioaktívneho materiálu dovoľuje, sa musí vykonať meranie, ktoré potvrdí, že stanovené uvoľňovacie úrovne pre plošnú aktivitu povrchovej rádioaktívnej kontamináci~~e~~ materiálu a hmotnostnú aktivitu materiálu sú dodržané. Ak povrch rádioaktívneho materiálu uvedené meranie neumožňuje, úrad alebo príslušný regionálny úrad môže povoliť iný postup na posúdenie splnenia stanovených kritérií na uvádzanie rádioaktívneho materiálu do životného prostredia.
3. Hmotnostná aktivita rádioaktívne kontaminovaného materiálu uvádzaného do životného prostredia sa stanovuje, ak úrad alebo príslušný regionálny úrad neurčí iný postup, ako priemerná hodnota reprezentatívnym meraním alebo odberom vzoriek rádioaktívneho materiálu uvoľňovaného do životného prostredia v objeme, ktorého hmotnosť nie je väčšia ako
   1. 1000 kg, ak ide o rovnomerne rádioaktívne kontaminovaný materiál,
   2. 300 kg, ak ide o nerovnomerne rádioaktívne kontaminovaný materiál.
4. Plošná aktivita povrchovej rádioaktívnej kontaminácie rádioaktívneho materiálu uvádzaného do životného prostredia sa stanovuje, ak úrad alebo príslušný regionálny úrad neurčí iný postup, ako priemerná hodnota reprezentatívnym meraním, ktorého plocha nie je väčšia ako
   1. 10 000 cm2, ak ide o rovnomerne rádioaktívne kontaminovaný materiál,
   2. 1000 cm2, ak ide o nerovnomerne rádioaktívne kontaminovaný materiál.
5. Plošná aktivita povrchovej rádioaktívnej kontaminácie pôdneho povrchu uvádzaného do životného prostredia sa stanovuje, ak úrad alebo príslušný regionálny úrad neurčí iný postup, ako priemerná hodnota reprezentatívnym meraním, ktorého plocha nie je väčšia ako 100 m2. Uvažuje sa len kontaminácia spôsobená pracoviskom alebo zariadením, ktoré sa na tomto pôdnom povrchu nachádzalo.
6. Ak ide o ťažko merateľný rádionuklid, hmotnostná aktivita podľa odseku 2 a plošná aktivita podľa odseku 3 sa stanovuje výpočtom.
7. Ak rádioaktívne kontaminovaný materiál obsahuje viac ako jeden druh rádioizotopu, pri posudzovaní dodržania uvoľňovacích úrovní sa používa súčtové pravidlo. Súčet podielov zistenej aktivity a uvoľňovacej úrovne všetkých zistených rádionuklidov a ťažko merateľných rádionuklidov, ktoré sa predpokladajú v uvoľňovanom rádioaktívne kontaminovanom materiáli, musí byť nižší ako jeden. Do úvahy sa berú všetky rádionuklidy, ktorých podiel aktivity a uvoľňovacej úrovne je vyšší ako 0,01.
8. Dcérske produkty v rádioaktívnej rovnováhe s materskými nuklidmi sa pri výpočtoch zanedbávajú a samostatne sa neposudzujú.
9. Pre tie rádionuklidy, ktoré nie sú uvedené v tabuľke č. 1, úrad alebo príslušný regionálny úrad stanoví príslušné úrovne. Pre rádionuklidy s polčasom premeny kratšou ako sedem dní alebo pri malom množstve rádioaktívneho materiálu, je možné na uvoľňovanie pevného a kvapalného materiálu uvedeného v tabuľke č. 1 použiť stanovené oslobodzovacie úrovne uvedené v stĺpci 3.
10. Uvoľňovacie úrovne na neobmedzené uvoľňovanie uvedené v tabuľke č. 1 stĺpec 4 a stĺpec 5 je možné použiť aj pre pevný materiál, odpad z demolácií a výkopovú zeminu.
11. Ak nie je možné vylúčiť ďalšie používanie objektov a priestorov, plošná aktivita povrchovej kontaminácie objektov a priestorov nemôže prekročiť uvoľňovacie úrovne pre neobmedzené uvoľňovanie uvedené v tabuľke č. 1 stĺpec 5.
12. Objekty a priestory môžu byť zdemolované, ak plošná aktivita povrchovej kontaminácie objektov a priestorov neprekročí uvoľňovacie úrovne pre neobmedzené uvoľňovanie uvedené v tabuľke č. 1 stĺpec 5.
13. Po uvoľnení objektov a priestorov spod administratívnej kontroly, odpad vzniknutý z ich demolácie  si nevyžaduje samostatné meranie na jeho uvoľnenie spod administratívnej kontroly.
14. Uvoľňovacie úrovne pre neobmedzené uvoľňovanie uvedené v tabuľke č. 1 je možné použiť na uvoľňovanie kovových fragmentov po ich recyklácii tavením.
15. Uvoľňovacie úrovne uvedené v odseku 13 sa neuplatňujú pre zliatiny kovových a nekovových komponentov.
16. Plošná aktivita povrchovej rádioaktívnej kontaminácie predmetov vynášaných z kontrolovaného pásma sa určuje ako priemer z plochy nie väčšej ako 150 cm2. Pre materiál rádioaktívne kontaminovaný v objeme sa hmotnostná aktivita určuje ako priemer v kilograme hmoty, ak nemožno vynášaný materiál rozdeliť na časti s hmotnosťou 1 kg, potom sa hmotnostná aktivita určuje ako priemer v najmenších častiach, na ktoré možno materiál rozumne rozdeliť, nie väčších ako 10 kg hmotnosti.

Tabuľka č. 1 **Oslobodzovacie úrovne, uvoľňovacie úrovne a úrovne aktivity vymedzujúce vysokoaktívny žiarič**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Rádionuklid (forma)** | **OSLOBODZOVACIE ÚROVNE** | | **VYSOKOAKTÍVNY ŽIARIČ** | **UVOĽŇOVACIE ÚROVNE** | |
| aktivita | hmotnostná aktivita | aktivita | hmotnostná aktivita | plošná aktivita |
| (Bq) | (Bq.g-1) | (Bq) | (Bq.g-1) | (Bq.cm-2) |
| **1** | **2** | **3** | **3a** | **4** | **5** |
| H-3 | 1,00E+09 | 1,00E+06 | 4,00E+11 | 1,00E+02 | 1,00E+02 |
| Be-7 | 1,00E+07 | 1,00E+03 | 2,00E+11 | 1,00E+01 | 1,00E+02 |
| Be-10 | 1,00E+06 | 1,00E+04 |  |  |  |
| C-11 | 1,00E+06 | 1,00E+01 |  |  |  |
| C-11 monoxid | 1,00E+09 | 1,00E+01 |  |  |  |
| C-11 dioxín | 1,00E+09 | 1,00E+01 |  |  |  |
| C-14 | 1,00E+07 | 1,00E+04 | 4,00E+11 | 1,00E+00 | 1,00E+02 |
| C-14 monoxid | 1,00E+11 | 1,00E+08 |  |  |  |
| C-14 dioxid | 1,00E+11 | 1,00E+07 |  |  |  |
| N-13 | 1,00E+09 | 1,00E+02 |  |  |  |
| O-15 | 1,00E+09 | 1,00E+02 |  |  |  |
| F-18 | 1,00E+06 | 1,00E+01 |  | 1,00E+01 | 1,00E+00 |
| Ne-19 | 1,00E+09 | 1,00E+02 |  |  |  |
| Na-22 | 1,00E+06 | 1,00E+01 | 5,00E+09 | 1,00E-01 | 1,00E+00 |
| Na-24 | 1,00E+05 | 1,00E+01 | 2,00E+09 | 1,00E+00 | 1,00E+00 |
| Mg-28+ | 1,00E+05 | 1,00E+01 |  |  |  |
| Al-26 | 1,00E+05 | 1,00E+01 |  |  |  |
| Si-31 | 1,00E+06 | 1,00E+03 | 6,00E+09 | 1,00E+03 | 1,00E+02 |
| Si-32 | 1,00E+06 | 1,00E+03 | 4,00E+11 | 4,00E+02 |  |
| P-32 | 1,00E+05 | 1,00E+03 | 5,00E+09 | 1,00E+03 | 1,00E+02 |
| P-33 | 1,00E+08 | 1,00E+05 | 4,00E+11 | 1,00E+03 | 1,00E+02 |
| S-35 | 1,00E+08 | 1,00E+05 | 4,00E+11 | 1,00E+02 | 1,00E+02 |
| S-35 organická | 1,00E+08 | 1,00E+05 |  |  |  |
| S-35 plyn | 1,00E+09 | 1,00E+06 |  |  |  |
| Cl-36 | 1,00E+06 | 1,00E+04 | 1,00E+11 | 1,00E+001) | 1,00E+02 |
| Cl-38 | 1,00E+05 | 1,00E+01 | 2,00E+09 | 1,00E+01 | 1,00E+00 |
| Cl-39 | 1,00E+05 | 1,00E+01 |  |  |  |
| Ar-37 | 1,00E+08 | 1,00E+06 | 4,00E+11 |  |  |
| Ar-39 | 1,00E+04 | 1,00E+07 |  |  |  |
| Ar-41 | 1,00E+09 | 1,00E+02 | 3,00E+09 |  | 1,00E+01 |
| K-40a) | 1,00E+06 | 1,00E+02 | 9,00E+09 |  | 1,00E+01 |
| K-42 | 1,00E+06 | 1,00E+02 | 2,00E+09 | 1,00E+02 | 1,00E+00 |
| K-43 | 1,00E+06 | 1,00E+01 | 7,00E+09 | 1,00E+01 |  |
| K-44 | 1,00E+05 | 1,00E+01 |  |  |  |
| K-45 | 1,00E+05 | 1,00E+01 |  |  |  |
| Ca-41 | 1,00E+07 | 1,00E+05 |  | 2,00E+01 | 1,00E+02 |
| Ca-45 | 1,00E+07 | 1,00E+04 | 4,00E+11 | 1,00E+02 |  |
| Ca-47 | 1,00E+06 | 1,00E+01 |  | 1,00E+01 | 1,00E+00 |
| Ca-47+ | 1,00E+06 | 1,00E+01 | 3,00E+10 | 1,00E+01 |  |
| Sc-43 | 1,00E+06 | 1,00E+01 |  |  |  |
| Sc-44 | 1,00E+05 | 1,00E+01 |  |  |  |
| Sc-44m | 1,00E+07 | 1,00E+02 |  |  | 1,00E+00 |
| Sc-46 | 1,00E+06 | 1,00E+01 | 5,00E+09 | 1,00E-01 | 1,00E+01 |
| Sc-47 | 1,00E+06 | 1,00E+02 | 1,00E+11 | 1,00E+02 | 1,00E+00 |
| Sc-48 | 1,00E+05 | 1,00E+01 | 3,00E+09 | 1,00E+00 |  |
| Sc-49 | 1,00E+05 | 1,00E+03 |  |  |  |
| Ti-44+ | 1,00E+05 | 1,00E+01 |  |  |  |
| Ti-45 | 1,00E+06 | 1,00E+01 |  |  |  |
| V-47 | 1,00E+05 | 1,00E+01 |  |  |  |
| **1** | **2** | **3** | **3a** | **4** | **5** |
| V-48 | 1,00E+05 | 1,00E+01 | 4,00E+09 | 1,00E+00 | 1,00E+00 |
| V-49 | 1,00E+07 | 1,00E+04 |  |  |  |
| Cr-48 | 1,00E+06 | 1,00E+02 |  |  |  |
| Cr-49 | 1,00E+06 | 1,00E+01 |  |  |  |
| Cr-51 | 1,00E+07 | 1,00E+03 | 3,00E+11 | 1,00E+02 | 1,00E+02 |
| Mn-51 | 1,00E+05 | 1,00E+01 |  | 1,00E+01 | 1,00E+00 |
| Mn-52 | 1,00E+05 | 1,00E+01 | 3,00E+09 | 1,00E+00 | 1,00E+00 |
| Mn-52m | 1,00E+05 | 1,00E+01 |  | 1,00E+01 | 1,00E+00 |
| Mn-53 | 1,00E+09 | 1,00E+04 |  | 1,00E+021) | 1,00E+02 |
| Mn-54 | 1,00E+06 | 1,00E+01 | 1,00E+10 | 1,00E-01 | 1,00E+00 |
| Mn-56 | 1,00E+05 | 1,00E+01 | 3,00E+09 | 1,00E+01 | 1,00E+00 |
| Fe-52 | 1,00E+06 | 1,00E+01 | 3,00E+09 | 1,00E+01 | 1,00E+02 |
| Fe-55 | 1,00E+06 | 1,00E+04 | 4,00E+11 | 1,00E+03 | 1,00E+02 |
| Fe-59 | 1,00E+06 | 1,00E+01 | 9,00E+09 | 1,00E+00 | 1,00E+00 |
| Fe-60+ | 1,00E+05 | 1,00E+02 |  |  |  |
| Co-55 | 1,00E+06 | 1,00E+01 | 5,00E+09 | 1,00E+01 | 1,00E+00 |
| Co-56 | 1,00E+05 | 1,00E+01 |  | 1,00E-01 | 1,00E+00 |
| Co-57 | 1,00E+06 | 1,00E+02 | 1,00E+11 | 1,00E+00 | 1,00E+01 |
| Co-58 | 1,00E+06 | 1,00E+01 | 1,00E+10 | 1,00E+00 | 1,00E+00 |
| Co-58m | 1,00E+07 | 1,00E+04 | 4,00E+11 | 1,00E+04 | 1,00E+02 |
| Co-60 | 1,00E+05 | 1,00E+01 | 3,00E+10 | 1,00E-01 | 1,00E+00 |
| Co-60m | 1,00E+06 | 1,00E+03 |  | 1,00E+03 | 1,00E+02 |
| Co-61 | 1,00E+06 | 1,00E+02 |  | 1,00E+02 | 1,00E+01 |
| Co-62m | 1,00E+05 | 1,00E+01 |  | 1,00E+01 | 1,00E+00 |
| Ni-56 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ni-57 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ni-59 | 1,00E+08 | 1,00E+04 |  | 1,00E+021) | 1,00E+02 |
| Ni-63 | 1,00E+08 | 1,00E+05 |  | 1,00E+02 | 1,00E+02 |
| Ni-65 | 1,00E+06 | 1,00E+01 |  | 1,00E+01 | 1,00E+01 |
| Cu-64 | 1,00E+06 | 1,00E+02 |  | 1,00E+02 | 1,00E+01 |
| Zn-65 | 1,00E+06 | 1,00E+01 |  | 1,00E-01 | 1,00E+00 |
| Zn-69 | 1,00E+06 | 1,00E+04 |  | 1,00E+03 | 1,00E+02 |
| Zn-69m | 1,00E+06 | 1,00E+02 |  | 1,00E+01 |  |
| Ga-66 | 1,00E+05 | 1,00E+01 |  |  |  |
| Ga-67 | 1,00E+06 | 1,00E+02 |  |  |  |
| Ga-68 | 1,00E+05 | 1,00E+01 |  |  |  |
| Ga-70 | 1,00E+06 | 1,00E+03 |  |  |  |
| Ga-72 | 1,00E+05 | 1,00E+01 | 4,00E+09 | 1,00E+01 | 1,00E+00 |
| Ga-73 | 1,00E+06 | 1,00E+02 |  |  |  |
| Ge-66 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ge-67 | 1,00E+05 | 1,00E+01 |  |  |  |
| Ge-68+ | 1,00E+05 | 1,00E+01 |  |  |  |
| Ge-69 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ge-71 | 1,00E+08 | 1,00E+04 | 4,00E+11 | 1,00E+04 | 1,00E+02 |
| Ge-75 | 1,00E+06 | 1,00E+03 |  |  |  |
| Ge-77 | 1,00E+05 | 1,00E+01 |  |  |  |
| Ge-78 | 1,00E+06 | 1,00E+02 |  |  |  |
| As-69 | 1,00E+05 | 1,00E+01 |  |  |  |
| As-70 | 1,00E+05 | 1,00E+01 |  |  |  |
| As-71 | 1,00E+06 | 1,00E+01 |  |  |  |
| As-72 | 1,00E+05 | 1,00E+01 |  |  |  |
| As-73 | 1,00E+07 | 1,00E+03 | 4,00E+11 | 1,00E+03 | 1,00E+02 |
| As-74 | 1,00E+06 | 1,00E+01 | 1,00E+10 | 1,00E+011) | 1,00E+00 |
| As-76 | 1,00E+05 | 1,00E+02 | 3,00E+09 | 1,00E+01 | 1,00E+01 |
| As-77 | 1,00E+06 | 1,00E+03 | 2,00E+11 | 1,00E+03 | 1,00E+02 |
| As-78 | 1,00E+05 | 1,00E+01 |  |  |  |
| Se-70 | 1,00E+06 | 1,00E+01 |  |  |  |
| Se-73 | 1,00E+06 | 1,00E+01 |  |  |  |
| Se-73m | 1,00E+06 | 1,00E+02 |  |  |  |
| Se-75 | 1,00E+06 | 1,00E+02 | 2,00E+11 | 1,00E+00 | 1,00E+01 |
| Se-79 | 1,00E+07 | 1,00E+04 |  |  |  |
| Se-81 | 1,00E+06 | 1,00E+03 |  |  |  |
| Se-81m | 1,00E+07 | 1,00E+03 |  |  |  |
| **1** | **2** | **3** | **3a** | **4** | **5** |
| Se-83 | 1,00E+05 | 1,00E+01 |  |  |  |
| Br-74 | 1,00E+05 | 1,00E+01 |  |  |  |
| Br-74m | 1,00E+05 | 1,00E+01 |  |  |  |
| Br-75 | 1,00E+06 | 1,00E+01 |  |  |  |
| Br-76 | 1,00E+05 | 1,00E+01 |  |  |  |
| Br-77 | 1,00E+06 | 1,00E+02 |  |  |  |
| Br-80 | 1,00E+05 | 1,00E+02 |  |  |  |
| Br-80m | 1,00E+07 | 1,00E+03 |  |  |  |
| Br-82 | 1,00E+06 | 1,00E+01 | 4,00E+09 | 1,00E+00 | 1,00E+00 |
| Br-83 | 1,00E+06 | 1,00E+03 |  |  |  |
| Br-84 | 1,00E+05 | 1,00E+01 |  |  |  |
| Kr-74 | 1,00E+09 | 1,00E+02 |  |  |  |
| Kr-76 | 1,00E+09 | 1,00E+02 |  |  |  |
| Kr-77 | 1,00E+09 | 1,00E+02 |  |  |  |
| Kr-79 | 1,00E+05 | 1,00E+03 |  |  |  |
| Kr-81 | 1,00E+07 | 1,00E+04 | 4,00E+11 |  |  |
| Kr-81m | 1,00E+10 | 1,00E+03 |  |  |  |
| Kr-83m | 1,00E+12 | 1,00E+05 |  |  |  |
| Kr-85 | 1,00E+04 | 1,00E+05 | 1,00E+11 |  |  |
| Kr-85m | 1,00E+10 | 1,00E+03 | 8,00E+10 |  |  |
| Kr-87 | 1,00E+09 | 1,00E+02 | 2,00E+09 |  |  |
| Kr-88 | 1,00E+09 | 1,00E+02 |  |  |  |
| Rb-79 | 1,00E+05 | 1,00E+01 |  |  |  |
| Rb-81 | 1,00E+06 | 1,00E+01 |  |  |  |
| Rb-81m | 1,00E+07 | 1,00E+03 |  |  |  |
| Rb-82m | 1,00E+06 | 1,00E+01 |  |  |  |
| Rb-83+ | 1,00E+06 | 1,00E+02 |  |  |  |
| Rb-84 | 1,00E+06 | 1,00E+01 |  |  |  |
| Rb-86 | 1,00E+05 | 1,00E+02 | 5,00E+09 | 1,00E+02 | 1,00E+01 |
| Rb-87 a) | 1,00E+07 | 1,00E+04 |  |  |  |
| Rb-88 | 1,00E+05 | 1,00E+01 |  |  |  |
| Rb-89 | 1,00E+05 | 1,00E+01 |  |  |  |
| Sr-80 | 1,00E+07 | 1,00E+03 |  |  |  |
| Sr-81 | 1,00E+05 | 1,00E+01 |  |  |  |
| Sr-82+ | 1,00E+05 | 1,00E+01 |  |  |  |
| Sr-83 | 1,00E+06 | 1,00E+01 |  |  |  |
| Sr-85 | 1,00E+06 | 1,00E+02 | 2,00E+10 | 1,00E+00 | 1,00E+00 |
| Sr-85m | 1,00E+07 | 1,00E+02 | 5,00E+10 | 1,00E+02 | 1,00E+01 |
| Sr-87m | 1,00E+06 | 1,00E+02 | 3,00E+10 | 1,00E+02 | 1,00E+01 |
| Sr-89 | 1,00E+06 | 1,00E+03 |  | 1,00E+03 | 1,00E+02 |
| Sr-90+ | 1,00E+04 | 1,00E+02 | 1,00E+12 | 1,00E+001) | 1,00E+00 |
| Sr-91 | 1,00E+05 | 1,00E+01 | 3,00E+09 | 1,00E+01 | 1,00E+00 |
| Sr-92 | 1,00E+06 | 1,00E+01 | 1,00E+10 | 1,00E+01 | 1,00E+00 |
| Y-86 | 1,00E+05 | 1,00E+01 |  |  |  |
| Y-86m | 1,00E+07 | 1,00E+02 |  |  |  |
| Y-87+ | 1,00E+06 | 1,00E+01 |  |  |  |
| Y-88 | 1,00E+06 | 1,00E+01 |  |  |  |
| Y-90 | 1,00E+05 | 1,00E+03 | 3,00E+09 | 1,00E+03 | 1,00E+02 |
| Y-91 | 1,00E+06 | 1,00E+03 | 6,00E+09 | 1,00E+02 | 1,00E+02 |
| Y-91m | 1,00E+06 | 1,00E+02 | 2,00E+10 | 1,00E+02 | 1,00E+00 |
| Y-92 | 1,00E+05 | 1,00E+02 |  | 1,00E+02 | 1,00E+01 |
| Y-93 | 1,00E+05 | 1,00E+02 |  | 1,00E+02 | 1,00E+01 |
| Y-94 | 1,00E+05 | 1,00E+01 |  |  |  |
| Y-95 | 1,00E+05 | 1,00E+01 |  |  |  |
| Zr-86 | 1,00E+07 | 1,00E+02 |  |  |  |
| Zr-88 | 1,00E+06 | 1,00E+02 |  |  |  |
| Zr-89 | 1,00E+06 | 1,00E+01 |  |  |  |
| Zr-93 |  |  |  | 1,00E+01 | 1,00E+02 |
| Zr-93+ | 1,00E+07 | 1,00E+03 |  | 1,00E+01 | 1,00E+02 |
| Zr-95 | 1,00E+06 | 1,00E+01 | 2,00E+10 | 1,00E+00 | 1,00E+00 |
| Zr-97 |  |  |  | 1,00E+01 |  |
| Zr-97+ | 1,00E+05 | 1,00E+01 | 4,00E+09 | 1,00E+01 | 1,00E+00 |
| Nb-88 | 1,00E+05 | 1,00E+01 |  |  |  |
| **1** | **2** | **3** | **3a** | **4** | **5** |
| Nb-89 | 1,00E+05 | 1,00E+01 |  |  |  |
| Nb-90 | 1,00E+05 | 1,00E+01 |  |  |  |
| Nb-93m | 1,00E+07 | 1,00E+04 | 4,00E+11 | 1,00E+01 | 1,00E+02 |
| Nb-94 | 1,00E+06 | 1,00E+01 | 7,00E+09 | 1,00E-01 | 1,00E+00 |
| Nb-95 | 1,00E+06 | 1,00E+01 | 1,00E+10 | 1,00E+00 | 1,00E+00 |
| Nb-97 | 1,00E+06 | 1,00E+01 | 9,00E+09 | 1,00E+01 | 1,00E+00 |
| Nb-98 | 1,00E+05 | 1,00E+01 |  | 1,00E+01 | 1,00E+00 |
| Mo-90 | 1,00E+06 | 1,00E+01 |  | 1,00E+01 | 1,00E+00 |
| Mo-93 | 1,00E+08 | 1,00E+03 | 4,00E+11 | 1,00E+011) | 1,00E+02 |
| Mo-99 | 1,00E+06 | 1,00E+02 | 1,00E+10 | 1,00E+01 | 1,00E+01 |
| Mo-101 | 1,00E+06 | 1,00E+01 |  | 1,00E+01 |  |
| Mo-101+ |  |  |  | 1,00E+01 | 1,00E+00 |
| Tc-93 | 1,00E+06 | 1,00E+01 |  |  |  |
| Tc-93m | 1,00E+06 | 1,00E+01 |  |  |  |
| Tc-94 | 1,00E+06 | 1,00E+01 |  |  |  |
| Tc-94m | 1,00E+05 | 1,00E+01 |  |  |  |
| Tc-95 | 1,00E+06 | 1,00E+01 |  |  |  |
| Tc-95m+ | 1,00E+06 | 1,00E+01 |  |  |  |
| Tc-96 | 1,00E+06 | 1,00E+01 | 4,00E+09 | 1,00E+00 | 1,00E+00 |
| Tc-96m | 1,00E+07 | 1,00E+03 | 4,00E+09 | 1,00E+03 | 1,00E+02 |
| Tc-97 | 1,00E+08 | 1,00E+03 |  | 1,00E+011) | 1,00E+02 |
| Tc-97m | 1,00E+07 | 1,00E+03 | 4,00E+11 | 1,00E+02 | 1,00E+02 |
| Tc-99 | 1,00E+07 | 1,00E+04 | 4,00E+11 | 1,00E+001) | 1,00E+02 |
| Tc-99m | 1,00E+07 | 1,00E+02 | 1,00E+11 | 1,00E+02 | 1,00E+01 |
| Tc-101 | 1,00E+06 | 1,00E+02 |  |  |  |
| Tc-104 | 1,00E+05 | 1,00E+01 |  |  |  |
| Ru-94 | 1,00E+06 | 1,00E+02 |  |  |  |
| Ru-97 | 1,00E+07 | 1,00E+02 | 5,00E+10 | 1,00E+01 | 1,00E+01 |
| Ru-103+ | 1,00E+06 | 1,00E+02 | 2,00E+10 | 1,00E+00 | 1,00E+01 |
| Ru-105 | 1,00E+06 | 1,00E+01 | 1,00E+10 | 1,00E+01 | 1,00E+00 |
| Ru-106+ | 1,00E+05 | 1,00E+02 | 2,00E+09 | 1,00E-01 | 1,00E+01 |
| Rh-99 | 1,00E+06 | 1,00E+01 |  |  |  |
| Rh-99m | 1,00E+06 | 1,00E+01 |  |  |  |
| Rh-100 | 1,00E+06 | 1,00E+01 |  |  |  |
| Rh-101 | 1,00E+07 | 1,00E+02 |  |  |  |
| Rh-101m | 1,00E+07 | 1,00E+02 |  |  |  |
| Rh-102 | 1,00E+06 | 1,00E+01 |  |  |  |
| Rh-102m | 1,00E+06 | 1,00E+02 |  |  |  |
| Rh-103m | 1,00E+08 | 1,00E+04 | 4,00E+11 | 1,00E+04 | 1,00E+02 |
| Rh-105 | 1,00E+07 | 1,00E+02 | 1,00E+11 | 1,00E+02 | 1,00E+01 |
| Rh-106m | 1,00E+05 | 1,00E+01 |  |  |  |
| Rh-107 | 1,00E+06 | 1,00E+02 |  |  |  |
| Pd-100 | 1,00E+07 | 1,00E+02 |  |  |  |
| Pd-101 | 1,00E+06 | 1,00E+02 |  |  |  |
| Pd-103+ | 1,00E+08 | 1,00E+03 | 4,00E+11 | 1,00E+03 | 1,00E+02 |
| Pd-107 | 1,00E+08 | 1,00E+05 |  |  |  |
| Pd-109 | 1,00E+06 | 1,00E+03 | 2,00E+10 | 1,00E+02 | 1,00E+02 |
| Ag-102 | 1,00E+05 | 1,00E+01 |  |  |  |
| Ag-103 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ag-104 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ag-104m | 1,00E+06 | 1,00E+01 |  |  |  |
| Ag-105 | 1,00E+06 | 1,00E+02 | 2,00E+10 | 1,00E+00 | 1,00E+00 |
| Ag-106 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ag-106m | 1,00E+06 | 1,00E+01 |  |  |  |
| Ag-108m+ | 1,00E+06 | 1,00E+01 | 7,00E+09 | 2,00E-01 | 1,00E+00 |
| Ag-110m | 1,00E+06 | 1,00E+01 | 4,00E+09 |  | 1,00E+00 |
| Ag-110m+ |  |  |  | 1,00E-01 | 1,00E+00 |
| Ag-111 | 1,00E+06 | 1,00E+03 |  | 1,00E+02 | 1,00E+02 |
| Ag-112 | 1,00E+05 | 1,00E+01 |  |  |  |
| Ag-115 | 1,00E+05 | 1,00E+01 |  |  |  |
| Cd-104 | 1,00E+07 | 1,00E+02 |  |  |  |
| Cd-107 | 1,00E+07 | 1,00E+03 |  |  |  |
| Cd-109+ | 1,00E+06 | 1,00E+04 | 3,00E+11 | 1,00E+00 | 1,00E+02 |
| **1** | **2** | **3** | **3a** | **4** | **5** |
| Cd-113a) | 1,00E+06 | 1,00E+03 |  |  |  |
| Cd-113m | 1,00E+06 | 1,00E+03 |  |  |  |
| Cd-115 | 1,00E+06 | 1,00E+02 | 3,00E+10 | 1,00E+02 | 1,00E+01 |
| Cd-115m | 1,00E+06 | 1,00E+03 | 5,00E+09 |  |  |
| Cd-115m+ |  |  |  | 2,00E+01 | 1,00E+02 |
| Cd-117 | 1,00E+06 | 1,00E+01 |  |  |  |
| Cd-117m | 1,00E+06 | 1,00E+01 |  |  |  |
| In-109 | 1,00E+06 | 1,00E+01 |  |  |  |
| In-110 | 1,00E+05 | 1,00E+01 |  |  |  |
| In-111 | 1,00E+06 | 1,00E+02 | 3,00E+10 | 1,00E+01 | 1,00E+01 |
| In-112 | 1,00E+06 | 1,00E+02 |  |  |  |
| In-113m | 1,00E+06 | 1,00E+02 | 4,00E+10 | 1,00E+02 | 1,00E+01 |
| In-114 | 1,00E+05 | 1,00E+03 |  |  |  |
| In-114m+ | 1,00E+06 | 1,00E+02 | 1,00E+11 | 1,00E+01 | 1,00E+01 |
| In-115 a) | 1,00E+06 | 1,00E+02 |  |  |  |
| In-115m | 1,00E+06 | 1,00E+02 | 7,00E+10 | 1,00E+02 | 1,00E+01 |
| In-116m | 1,00E+05 | 1,00E+01 |  |  |  |
| In-117 | 1,00E+06 | 1,00E+01 |  |  |  |
| In-117m | 1,00E+06 | 1,00E+02 |  |  |  |
| In-119m | 1,00E+05 | 1,00E+02 |  |  |  |
| Sn-110 | 1,00E+07 | 1,00E+02 |  |  |  |
| Sn-111 | 1,00E+06 | 1,00E+02 |  |  |  |
| Sn-113 | 1,00E+07 | 1,00E+03 | 4,00E+10 |  | 1,00E+01 |
| Sn-113+ |  |  |  | 1,00E+00 | 1,00E+01 |
| Sn-117m | 1,00E+06 | 1,00E+02 |  |  |  |
| Sn-119m | 1,00E+07 | 1,00E+03 |  |  |  |
| Sn-121 | 1,00E+07 | 1,00E+05 |  |  |  |
| Sn-121m+ | 1,00E+07 | 1,00E+03 |  |  |  |
| Sn-123 | 1,00E+06 | 1,00E+03 |  |  |  |
| Sn-123m | 1,00E+06 | 1,00E+02 |  |  |  |
| Sn-125 | 1,00E+05 | 1,00E+02 | 4,00E+09 | 1,00E+011) | 1,00E+01 |
| Sn-126+ | 1,00E+05 | 1,00E+01 |  |  |  |
| Sn-127 | 1,00E+06 | 1,00E+01 |  |  |  |
| Sn-128 | 1,00E+06 | 1,00E+01 |  |  |  |
| Sb-115 | 1,00E+06 | 1,00E+01 |  |  |  |
| Sb-116 | 1,00E+06 | 1,00E+01 |  |  |  |
| Sb-116m | 1,00E+05 | 1,00E+01 |  |  |  |
| Sb-117 | 1,00E+07 | 1,00E+02 |  |  |  |
| Sb-118m | 1,00E+06 | 1,00E+01 |  |  |  |
| Sb-119 | 1,00E+07 | 1,00E+03 |  |  |  |
| Sb-120m | 1,00E+06 | 1,00E+01 |  |  |  |
| Sb-122 | 1,00E+04 | 1,00E+02 | 4,00E+09 | 1,00E+01 | 1,00E+01 |
| Sb-124 | 1,00E+06 | 1,00E+01 | 6,00E+09 | 1,00E+00 | 1,00E+00 |
| Sb-125+ | 1,00E+06 | 1,00E+02 | 2,00E+10 | 1,00E-01 | 1,00E+01 |
| Sb-126 | 1,00E+05 | 1,00E+01 |  |  |  |
| Sb-126m | 1,00E+05 | 1,00E+01 |  |  |  |
| Sb-127 | 1,00E+06 | 1,00E+01 |  |  |  |
| Sb-128m | 1,00E+05 | 1,00E+01 |  |  |  |
| Sb-129 | 1,00E+06 | 1,00E+01 |  |  |  |
| Sb-130 | 1,00E+05 | 1,00E+01 |  |  |  |
| Sb-131 | 1,00E+06 | 1,00E+01 |  |  |  |
| Te-116 | 1,00E+07 | 1,00E+02 |  |  |  |
| Te-121 | 1,00E+06 | 1,00E+01 |  |  |  |
| Te-121m | 1,00E+06 | 1,00E+02 |  |  |  |
| Te-123 a) | 1,00E+06 | 1,00E+03 |  |  |  |
| Te-123m | 1,00E+07 | 1,00E+02 | 8,00E+10 | 1,00E+00 | 1,00E+01 |
| Te-125m | 1,00E+07 | 1,00E+03 | 2,00E+11 | 1,00E+03 | 1,00E+02 |
| Te-127 | 1,00E+06 | 1,00E+03 | 2,00E+11 | 1,00E+03 | 1,00E+02 |
| Te-127m+ | 1,00E+07 | 1,00E+03 | 2,00E+11 | 1,00E+01 | 1,00E+02 |
| Te-129 | 1,00E+06 | 1,00E+02 | 7,00E+09 | 1,00E+02 | 1,00E+01 |
| Te-129m+ | 1,00E+06 | 1,00E+03 | 8,00E+09 | 1,00E+01 | 1,00E+01 |
| Te-131 | 1,00E+05 | 1,00E+02 |  | 1,00E+02 | 1,00E+01 |
| Te-131m | 1,00E+06 | 1,00E+01 | 7,00E+09 |  |  |
| **1** | **2** | **3** | **3a** | **4** | **5** |
| Te-131m+ |  |  |  | 1,00E+01 | 1,00E+00 |
| Te-132 | 1,00E+07 | 1,00E+02 | 5,00E+09 | 1,00E+00 | 1,00E+00 |
| Te-133 | 1,00E+05 | 1,00E+01 |  | 1,00E+01 | 1,00E+00 |
| Te-133m | 1,00E+05 | 1,00E+01 |  | 1,00E+01 |  |
| Te-133m+ |  |  |  | 1,00E+01 | 1,00E+00 |
| Te-134 | 1,00E+06 | 1,00E+01 |  | 1,00E+01 | 1,00E+00 |
| I-120 | 1,00E+05 | 1,00E+01 |  |  |  |
| I-120m | 1,00E+05 | 1,00E+01 |  |  |  |
| I-121 | 1,00E+06 | 1,00E+02 |  |  |  |
| I-123 | 1,00E+07 | 1,00E+02 | 6,00E+10 | 1,00E+02 | 1,00E+01 |
| I-124 | 1,00E+06 | 1,00E+01 |  |  |  |
| I-125 | 1,00E+06 | 1,00E+03 | 2,00E+11 | 1,00E+02 | 1,00E+01 |
| I-126 | 1,00E+06 | 1,00E+02 | 2,00E+10 | 1,00E+01 | 1,00E+01 |
| I-128 | 1,00E+05 | 1,00E+02 |  |  |  |
| I-129 | 1,00E+05 | 1,00E+02 |  | 1,00E-021) | 1,00E+00 |
| I-130 | 1,00E+06 | 1,00E+01 |  | 1,00E+01 | 1,00E+00 |
| I-131 | 1,00E+06 | 1,00E+02 | 3,00E+10 | 1,00E+01 | 1,00E+01 |
| I-132 | 1,00E+05 | 1,00E+01 | 4,00E+09 | 1,00E+01 | 1,00E+00 |
| I-132m | 1,00E+06 | 1,00E+02 |  |  |  |
| I-133 | 1,00E+06 | 1,00E+01 | 7,00E+09 | 1,00E+01 |  |
| I-133+ |  |  |  | 1,00E+01 | 1,00E+01 |
| I-134 | 1,00E+05 | 1,00E+01 | 3,00E+09 | 1,00E+01 | 1,00E+00 |
| I-135 |  |  |  | 1,00E+01 |  |
| I-135+ | 1,00E+06 | 1,00E+01 | 6,00E+09 | 1,00E+01 | 1,00E+00 |
| Xe-120 | 1,00E+09 | 1,00E+02 |  |  |  |
| Xe-121 | 1,00E+09 | 1,00E+02 |  |  |  |
| Xe-122+ | 1,00E+09 | 1,00E+02 |  |  |  |
| Xe-123 | 1,00E+09 | 1,00E+02 |  |  |  |
| Xe-125 | 1,00E+09 | 1,00E+03 |  |  |  |
| Xe-127 | 1,00E+05 | 1,00E+03 |  |  |  |
| Xe-129m | 1,00E+04 | 1,00E+03 |  |  |  |
| Xe-131m | 1,00E+04 | 1,00E+04 | 4,00E+11 |  |  |
| Xe-133 | 1,00E+04 | 1,00E+03 | 2,00E+11 |  |  |
| Xe-133m | 1,00E+04 | 1,00E+03 |  |  |  |
| Xe-135 | 1,00E+10 | 1,00E+03 | 3,00E+10 |  |  |
| Xe-135m | 1,00E+09 | 1,00E+02 |  |  |  |
| Xe-138 | 1,00E+09 | 1,00E+02 |  |  |  |
| Cs-125 | 1,00E+04 | 1,00E+01 |  |  |  |
| Cs-127 | 1,00E+05 | 1,00E+02 |  |  |  |
| Cs-129 | 1,00E+05 | 1,00E+02 | 4,00E+10 | 1,00E+01 | 1,00E+01 |
| Cs-130 | 1,00E+06 | 1,00E+02 |  |  |  |
| Cs-131 | 1,00E+06 | 1,00E+03 | 3,00E+11 | 1,00E+03 | 1,00E+02 |
| Cs-132 | 1,00E+05 | 1,00E+01 | 1,00E+10 | 1,00E+01 | 1,00E+00 |
| Cs-134 | 1,00E+04 | 1,00E+01 |  | 1,00E-01 | 1,00E+00 |
| Cs-134m | 1,00E+05 | 1,00E+03 | 4,00E+11 | 1,00E+03 | 1,00E+02 |
| Cs-135 | 1,00E+07 | 1,00E+04 | 4,00E+11 | 1,00E+02 | 1,00E+02 |
| Cs-136 | 1,00E+05 | 1,00E+01 |  | 1,00E+001) | 1,00E+00 |
| Cs-137+ | 1,00E+04 | 1,00E+01 | 1,00E+11 | 1,00E-01 | 1,00E+00 |
| Cs-138 | 1,00E+04 | 1,00E+01 |  | 1,00E+01 | 1,00E+00 |
| Ba-126 | 1,00E+07 | 1,00E+02 |  |  |  |
| Ba-128 | 1,00E+07 | 1,00E+02 |  |  |  |
| Ba-131+ | 1,00E+06 | 1,00E+02 | 2,00E+10 | 1,00E+011) | 1,00E+01 |
| Ba-131m | 1,00E+07 | 1,00E+02 |  |  |  |
| Ba-133 | 1,00E+06 | 1,00E+02 |  | 1,00E+00 | 1,00E+00 |
| Ba-133m | 1,00E+06 | 1,00E+02 |  |  |  |
| Ba-135m | 1,00E+06 | 1,00E+02 |  |  |  |
| Ba-137m | 1,00E+06 | 1,00E+01 |  |  |  |
| Ba-139 | 1,00E+05 | 1,00E+02 |  |  |  |
| Ba-140+ | 1,00E+05 | 1,00E+01 | 5,00E+09 | 1,00E+00 | 1,00E+00 |
| Ba-141 | 1,00E+05 | 1,00E+01 |  |  |  |
| Ba-142 | 1,00E+06 | 1,00E+01 |  |  |  |
| La-131 | 1,00E+06 | 1,00E+01 |  |  |  |
| La-132 | 1,00E+06 | 1,00E+01 |  |  |  |
| **1** | **2** | **3** | **3a** | **4** | **5** |
| La-135 | 1,00E+07 | 1,00E+03 |  |  |  |
| La-137 | 1,00E+07 | 1,00E+03 |  |  |  |
| La-138 a) | 1,00E+07 | 1,00E+01 |  |  |  |
| La-140 | 1,00E+05 | 1,00E+01 | 4,00E+09 | 1,00E+00 | 1,00E+00 |
| La-141 | 1,00E+05 | 1,00E+02 |  |  |  |
| La-142 | 1,00E+05 | 1,00E+01 |  |  |  |
| La-143 | 1,00E+05 | 1,00E+02 |  |  |  |
| Ce-134 | 1,00E+07 | 1,00E+03 |  |  |  |
| Ce-135 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ce-137 | 1,00E+07 | 1,00E+03 |  |  |  |
| Ce-137m | 1,00E+06 | 1,00E+03 |  |  |  |
| Ce-139 | 1,00E+06 | 1,00E+02 | 7,00E+10 | 1,00E+00 | 1,00E+01 |
| Ce-141 | 1,00E+07 | 1,00E+02 | 2,00E+11 | 1,00E+02 | 1,00E+01 |
| Ce-143 | 1,00E+06 | 1,00E+02 | 9,00E+09 | 1,00E+01 | 1,00E+01 |
| Ce-144+ | 1,00E+05 | 1,00E+02 | 2,00E+09 | 1,00E+01 | 1,00E+02 |
| Pr-136 | 1,00E+05 | 1,00E+01 |  |  |  |
| Pr-137 | 1,00E+06 | 1,00E+02 |  |  |  |
| Pr-138m | 1,00E+06 | 1,00E+01 |  |  |  |
| Pr-139 | 1,00E+07 | 1,00E+02 |  |  |  |
| Pr-142 | 1,00E+05 | 1,00E+02 | 4,00E+09 | 1,00E+02 | 1,00E+01 |
| Pr-142m | 1,00E+09 | 1,00E+07 |  |  |  |
| Pr-143 | 1,00E+06 | 1,00E+04 | 3,00E+10 | 1,00E+03 | 1,00E+02 |
| Pr-144 | 1,00E+05 | 1,00E+02 |  |  |  |
| Pr-145 | 1,00E+05 | 1,00E+03 |  |  |  |
| Pr-147 | 1,00E+05 | 1,00E+01 |  |  |  |
| Nd-136 | 1,00E+06 | 1,00E+02 |  |  |  |
| Nd-138 | 1,00E+07 | 1,00E+03 |  |  |  |
| Nd-139 | 1,00E+06 | 1,00E+02 |  |  |  |
| Nd-139m | 1,00E+06 | 1,00E+01 |  |  |  |
| Nd-141 | 1,00E+07 | 1,00E+02 |  |  |  |
| Nd-147 | 1,00E+06 | 1,00E+02 | 6,00E+10 | 1,00E+02 | 1,00E+01 |
| Nd-149 | 1,00E+06 | 1,00E+02 | 6,00E+09 | 1,00E+02 | 1,00E+01 |
| Nd-151 | 1,00E+05 | 1,00E+01 |  |  |  |
| Pm-141 | 1,00E+05 | 1,00E+01 |  |  |  |
| Pm-143 | 1,00E+06 | 1,00E+02 |  |  |  |
| Pm-144 | 1,00E+06 | 1,00E+01 |  |  |  |
| Pm-145 | 1,00E+07 | 1,00E+03 |  |  |  |
| Pm-146 | 1,00E+06 | 1,00E+01 |  |  |  |
| Pm-147 | 1,00E+07 | 1,00E+04 | 4,00E+13 | 1,00E+03 | 1,00E+02 |
| Pm-148 | 1,00E+05 | 1,00E+01 |  |  |  |
| Pm-148m+ | 1,00E+06 | 1,00E+01 |  |  |  |
| Pm-149 | 1,00E+06 | 1,00E+03 | 2,00E+10 | 1,00E+03 | 1,00E+02 |
| Pm-150 | 1,00E+05 | 1,00E+01 |  |  |  |
| Pm-151 | 1,00E+06 | 1,00E+02 |  |  |  |
| Sm-141 | 1,00E+05 | 1,00E+01 |  |  |  |
| Sm-141m | 1,00E+06 | 1,00E+01 |  |  |  |
| Sm-142 | 1,00E+07 | 1,00E+02 |  |  |  |
| Sm-145 | 1,00E+07 | 1,00E+02 |  |  |  |
| Sm-146 | 1,00E+05 | 1,00E+01 |  |  |  |
| Sm-147 a) | 1,00E+04 | 1,00E+01 |  |  |  |
| Sm-151 | 1,00E+08 | 1,00E+04 | 4,00E+11 | 1,00E+03 | 1,00E+02 |
| Sm-153 | 1,00E+06 | 1,00E+02 | 9,00E+10 | 1,00E+02 | 1,00E+01 |
| Sm-155 | 1,00E+06 | 1,00E+02 |  |  |  |
| Sm-156 | 1,00E+06 | 1,00E+02 |  |  |  |
| Eu-145 | 1,00E+06 | 1,00E+01 |  |  |  |
| Eu-146 | 1,00E+06 | 1,00E+01 |  |  |  |
| Eu-147 | 1,00E+06 | 1,00E+02 |  |  |  |
| Eu-148 | 1,00E+06 | 1,00E+01 |  |  |  |
| Eu-149 | 1,00E+07 | 1,00E+02 |  |  |  |
| Eu-150 | 1,00E+06 | 1,00E+01 |  |  |  |
| Eu-152 | 1,00E+06 | 1,00E+01 | 1,00E+10 | 1,00E-01 | 1,00E+00 |
| Eu-152m | 1,00E+06 | 1,00E+02 | 8,00E+09 | 1,00E+02 | 1,00E+01 |
| Eu-154 | 1,00E+06 | 1,00E+01 | 9,00E+09 | 1,00E-01 | 1,00E+00 |
| **1** | **2** | **3** | **3a** | **4** | **5** |
| Eu-155 | 1,00E+07 | 1,00E+02 | 2,00E+11 | 1,00E+00 | 1,00E+01 |
| Eu-156 | 1,00E+06 | 1,00E+01 |  |  |  |
| Eu-157 | 1,00E+06 | 1,00E+02 |  |  |  |
| Eu-158 | 1,00E+05 | 1,00E+01 |  |  |  |
| Gd-145 | 1,00E+05 | 1,00E+01 |  |  |  |
| Gd-146+ | 1,00E+06 | 1,00E+01 |  |  |  |
| Gd-147 | 1,00E+06 | 1,00E+01 |  |  |  |
| Gd-148 | 1,00E+04 | 1,00E+01 |  |  |  |
| Gd-149 | 1,00E+06 | 1,00E+02 |  |  |  |
| Gd-151 | 1,00E+07 | 1,00E+02 |  |  |  |
| Gd-152 a) | 1,00E+04 | 1,00E+01 |  |  |  |
| Gd-153 | 1,00E+07 | 1,00E+02 | 1,00E+12 | 1,00E+01 | 1,00E+01 |
| Gd-159 | 1,00E+06 | 1,00E+03 | 3,00E+10 | 1,00E+02 | 1,00E+02 |
| Tb-147 | 1,00E+06 | 1,00E+01 |  |  |  |
| Tb-149 | 1,00E+06 | 1,00E+01 |  |  |  |
| Tb-150 | 1,00E+06 | 1,00E+01 |  |  |  |
| Tb-151 | 1,00E+06 | 1,00E+01 |  |  |  |
| Tb-153 | 1,00E+07 | 1,00E+02 |  |  |  |
| Tb-154 | 1,00E+06 | 1,00E+01 |  |  |  |
| Tb-155 | 1,00E+07 | 1,00E+02 |  |  |  |
| Tb-156 | 1,00E+06 | 1,00E+01 |  |  |  |
| Tb-156m | 1,00E+07 | 1,00E+03 |  |  |  |
| Tb-157 | 1,00E+07 | 1,00E+04 |  |  |  |
| Tb-158 | 1,00E+06 | 1,00E+01 |  |  |  |
| Tb-160 | 1,00E+06 | 1,00E+01 | 1,00E+10 | 1,00E+00 | 1,00E+00 |
| Tb-161 | 1,00E+06 | 1,00E+03 |  |  |  |
| Dy-155 | 1,00E+06 | 1,00E+01 |  |  |  |
| Dy-157 | 1,00E+06 | 1,00E+02 |  |  |  |
| Dy-159 | 1,00E+07 | 1,00E+03 |  |  |  |
| Dy-165 | 1,00E+06 | 1,00E+03 | 9,00E+09 | 1,00E+03 | 1,00E+02 |
| Dy-166 | 1,00E+06 | 1,00E+03 | 9,00E+09 | 1,00E+02 |  |
| Dy-166+ |  |  |  | 1,00E+02 | 1,00E+01 |
| Ho-155 | 1,00E+06 | 1,00E+02 |  |  |  |
| Ho-157 | 1,00E+06 | 1,00E+02 |  |  |  |
| Ho-159 | 1,00E+06 | 1,00E+02 |  |  |  |
| Ho-161 | 1,00E+07 | 1,00E+02 |  |  |  |
| Ho-162 | 1,00E+07 | 1,00E+02 |  |  |  |
| Ho-162m | 1,00E+06 | 1,00E+01 |  |  |  |
| Ho-164 | 1,00E+06 | 1,00E+03 |  |  |  |
| Ho-164m | 1,00E+07 | 1,00E+03 |  |  |  |
| Ho-166 | 1,00E+05 | 1,00E+03 | 4,00E+09 | 1,00E+02 | 1,00E+02 |
| Ho-166m | 1,00E+06 | 1,00E+01 |  |  |  |
| Ho-167 | 1,00E+06 | 1,00E+02 |  |  |  |
| Er-161 | 1,00E+06 | 1,00E+01 |  |  |  |
| Er-165 | 1,00E+07 | 1,00E+03 |  |  |  |
| Er-169 | 1,00E+07 | 1,00E+04 | 4,00E+11 | 1,00E+03 | 1,00E+02 |
| Er-171 | 1,00E+06 | 1,00E+02 | 8,00E+09 | 1,00E+02 | 1,00E+01 |
| Er-172 | 1,00E+06 | 1,00E+02 |  |  |  |
| Tm-162 | 1,00E+06 | 1,00E+01 |  |  |  |
| Tm-166 | 1,00E+06 | 1,00E+01 |  |  |  |
| Tm-167 | 1,00E+06 | 1,00E+02 |  |  |  |
| Tm-170 | 1,00E+06 | 1,00E+03 | 2,00E+13 | 1,00E+02 | 1,00E+02 |
| Tm-171 | 1,00E+08 | 1,00E+04 | 4,00E+11 | 1,00E+03 | 1,00E+02 |
| Tm-172 | 1,00E+06 | 1,00E+02 |  |  |  |
| Tm-173 | 1,00E+06 | 1,00E+02 |  |  |  |
| Tm-175 | 1,00E+06 | 1,00E+01 |  |  |  |
| Yb-162 | 1,00E+07 | 1,00E+02 |  |  |  |
| Yb-166 | 1,00E+07 | 1,00E+02 |  |  |  |
| Yb-167 | 1,00E+06 | 1,00E+02 |  |  |  |
| Yb-169 | 1,00E+07 | 1,00E+02 | 3,00E+11 |  |  |
| Yb-175 | 1,00E+07 | 1,00E+03 | 3,00E+11 | 1,00E+02 | 1,00E+02 |
| Yb-177 | 1,00E+06 | 1,00E+02 |  |  |  |
| Yb-178 | 1,00E+06 | 1,00E+03 |  |  |  |
| **1** | **2** | **3** | **3a** | **4** | **5** |
| Lu-169 | 1,00E+06 | 1,00E+01 |  |  |  |
| Lu-170 | 1,00E+06 | 1,00E+01 |  |  |  |
| Lu-171 | 1,00E+06 | 1,00E+01 |  |  |  |
| Lu-172 | 1,00E+06 | 1,00E+01 |  |  |  |
| Lu-173 | 1,00E+07 | 1,00E+02 |  |  |  |
| Lu-174 | 1,00E+07 | 1,00E+02 |  |  |  |
| Lu-174m | 1,00E+07 | 1,00E+02 |  |  |  |
| Lu-176 a) | 1,00E+06 | 1,00E+02 |  |  |  |
| Lu-176m | 1,00E+06 | 1,00E+03 |  |  |  |
| Lu-177 | 1,00E+07 | 1,00E+03 | 3,00E+11 | 1,00E+02 | 1,00E+02 |
| Lu-177m | 1,00E+06 | 1,00E+01 |  |  |  |
| Lu-178 | 1,00E+05 | 1,00E+02 |  |  |  |
| Lu-178m | 1,00E+05 | 1,00E+01 |  |  |  |
| Lu-179 | 1,00E+06 | 1,00E+03 |  |  |  |
| Hf-170 | 1,00E+06 | 1,00E+02 |  |  |  |
| Hf-172+ | 1,00E+06 | 1,00E+01 |  |  |  |
| Hf-173 | 1,00E+06 | 1,00E+02 |  |  |  |
| Hf-175 | 1,00E+06 | 1,00E+02 |  |  |  |
| Hf-177m | 1,00E+05 | 1,00E+01 |  |  |  |
| Hf-178m | 1,00E+06 | 1,00E+01 |  |  |  |
| Hf-179m | 1,00E+06 | 1,00E+01 |  |  |  |
| Hf-180m | 1,00E+06 | 1,00E+01 |  |  |  |
| Hf-181 | 1,00E+06 | 1,00E+01 | 2,00E+10 | 1,00E+00 | 1,00E+00 |
| Hf-182 | 1,00E+06 | 1,00E+02 |  |  |  |
| Hf-182m | 1,00E+06 | 1,00E+01 |  |  |  |
| Hf-183 | 1,00E+06 | 1,00E+01 |  |  |  |
| Hf-184 | 1,00E+06 | 1,00E+02 |  |  |  |
| Ta-172 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ta-173 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ta-174 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ta-175 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ta-176 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ta-177 | 1,00E+07 | 1,00E+02 |  |  |  |
| Ta-178 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ta-179 | 1,00E+07 | 1,00E+03 |  |  |  |
| Ta-180 a) | 1,00E+06 | 1,00E+01 |  |  |  |
| Ta-180m | 1,00E+07 | 1,00E+03 |  |  |  |
| Ta-182 | 1,00E+04 | 1,00E+01 | 9,00E+09 | 1,00E-01 | 1,00E+00 |
| Ta-182m | 1,00E+06 | 1,00E+02 |  |  |  |
| Ta-183 | 1,00E+06 | 1,00E+02 |  |  |  |
| Ta-184 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ta-185 | 1,00E+05 | 1,00E+02 |  |  |  |
| Ta-186 | 1,00E+05 | 1,00E+01 |  |  |  |
| W-176 | 1,00E+06 | 1,00E+02 |  |  |  |
| W-177 | 1,00E+06 | 1,00E+01 |  |  |  |
| W-178+ | 1,00E+06 | 1,00E+01 |  |  |  |
| W-179 | 1,00E+07 | 1,00E+02 |  |  |  |
| W-181 | 1,00E+07 | 1,00E+03 | 3,00E+11 | 1,00E+01 | 1,00E+02 |
| W-185 | 1,00E+07 | 1,00E+04 | 4,00E+11 | 1,00E+03 | 1,00E+02 |
| W-187 | 1,00E+06 | 1,00E+02 | 2,00E+10 | 1,00E+01 | 1,00E+01 |
| W-188+ | 1,00E+05 | 1,00E+02 |  |  |  |
| Re-177 | 1,00E+06 | 1,00E+01 |  |  |  |
| Re-178 | 1,00E+06 | 1,00E+01 |  |  |  |
| Re-181 | 1,00E+06 | 1,00E+01 |  |  |  |
| Re-182 | 1,00E+06 | 1,00E+01 |  |  |  |
| Re-184 | 1,00E+06 | 1,00E+01 |  |  |  |
| Re-184m | 1,00E+06 | 1,00E+02 |  |  |  |
| Re-186 | 1,00E+06 | 1,00E+03 | 2,00E+10 | 1,00E+03 | 1,00E+02 |
| Re-186m | 1,00E+07 | 1,00E+03 |  |  |  |
| Re-187 a) | 1,00E+09 | 1,00E+06 |  |  |  |
| Re-188 | 1,00E+05 | 1,00E+02 | 4,00E+09 | 1,00E+02 | 1,00E+01 |
| Re-188m | 1,00E+07 | 1,00E+02 |  |  |  |
| Re-189+ | 1,00E+06 | 1,00E+02 |  |  |  |
| **1** | **2** | **3** | **3a** | **4** | **5** |
| Os-180 | 1,00E+07 | 1,00E+02 |  |  |  |
| Os-181 | 1,00E+06 | 1,00E+01 |  |  |  |
| Os-182 | 1,00E+06 | 1,00E+02 |  |  |  |
| Os-185 | 1,00E+06 | 1,00E+01 | 1,00E+10 | 1,00E+00 | 1,00E+00 |
| Os-189m | 1,00E+07 | 1,00E+04 |  |  |  |
| Os-191 | 1,00E+07 | 1,00E+02 | 1,00E+11 | 1,00E+02 | 1,00E+01 |
| Os-191m | 1,00E+07 | 1,00E+03 | 4,00E+11 | 1,00E+03 | 1,00E+02 |
| Os-193 | 1,00E+06 | 1,00E+02 | 2,00E+10 | 1,00E+02 | 1,00E+01 |
| Os-194+ | 1,00E+05 | 1,00E+02 |  |  |  |
| Ir-182 | 1,00E+05 | 1,00E+01 |  |  |  |
| Ir-184 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ir-185 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ir-186 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ir-187 | 1,00E+06 | 1,00E+02 |  |  |  |
| Ir-188 | 1,00E+06 | 1,00E+01 |  |  |  |
| Ir-189+ | 1,00E+07 | 1,00E+02 |  |  |  |
| Ir-190+ | 1,00E+06 | 1,00E+01 | 7,00E+09 | 1,00E+00 | 1,00E+00 |
| Ir-192 | 1,00E+04 | 1,00E+01 | 8,00E+10 | 1,00E+00 | 1,00E+00 |
| Ir-192m | 1,00E+07 | 1,00E+02 |  |  |  |
| Ir-193m | 1,00E+07 | 1,00E+04 |  |  |  |
| Ir-194 | 1,00E+05 | 1,00E+02 | 3,00E+09 | 1,00E+021) | 1,00E+01 |
| Ir-194m | 1,00E+06 | 1,00E+01 |  |  |  |
| Ir-195 | 1,00E+06 | 1,00E+02 |  |  |  |
| Ir-195m | 1,00E+06 | 1,00E+02 |  |  |  |
| Pt-186 | 1,00E+06 | 1,00E+01 |  |  |  |
| Pt-188+ | 1,00E+06 | 1,00E+01 |  |  |  |
| Pt-189 | 1,00E+06 | 1,00E+02 |  |  |  |
| Pt-191 | 1,00E+06 | 1,00E+02 | 4,00E+10 | 1,00E+01 | 1,00E+01 |
| Pt-193 | 1,00E+07 | 1,00E+04 | 4,00E+11 |  |  |
| Pt-193m | 1,00E+07 | 1,00E+03 | 4,00E+11 | 1,00E+03 | 1,00E+02 |
| Pt-195m | 1,00E+06 | 1,00E+02 |  |  |  |
| Pt-197 | 1,00E+06 | 1,00E+03 | 2,00E+11 | 1,00E+03 | 1,00E+02 |
| Pt-197m | 1,00E+06 | 1,00E+02 | 1,00E+11 | 1,00E+02 | 1,00E+01 |
| Pt-199 | 1,00E+06 | 1,00E+02 |  |  |  |
| Pt-200 | 1,00E+06 | 1,00E+02 |  |  |  |
| Au-193 | 1,00E+07 | 1,00E+02 |  |  |  |
| Au-194 | 1,00E+06 | 1,00E+01 |  |  |  |
| Au-195 | 1,00E+07 | 1,00E+02 |  |  |  |
| Au-198 | 1,00E+06 | 1,00E+02 | 1,00E+10 | 1,00E+01 | 1,00E+01 |
| Au-198m | 1,00E+06 | 1,00E+01 |  |  |  |
| Au-199 | 1,00E+06 | 1,00E+02 | 1,00E+11 | 1,00E+02 | 1,00E+01 |
| Au-200 | 1,00E+05 | 1,00E+02 |  |  |  |
| Au-200m | 1,00E+06 | 1,00E+01 |  |  |  |
| Au-201 | 1,00E+06 | 1,00E+02 |  |  |  |
| Hg-193 | 1,00E+06 | 1,00E+02 |  |  |  |
| Hg-193m | 1,00E+06 | 1,00E+01 |  |  |  |
| Hg-194+ | 1,00E+06 | 1,00E+01 |  |  |  |
| Hg-195 | 1,00E+06 | 1,00E+02 |  |  |  |
| Hg-195m+ | 1,00E+06 | 1,00E+02 |  |  |  |
| Hg-197 | 1,00E+07 | 1,00E+02 | 2,00E+11 | 1,00E+02 | 1,00E+01 |
| Hg-197m | 1,00E+06 | 1,00E+02 | 1,00E+11 | 1,00E+02 | 1,00E+01 |
| Hg-203 | 1,00E+05 | 1,00E+02 | 5,00E+10 | 1,00E+011) | 1,00E+01 |
| Tl-194 | 1,00E+06 | 1,00E+01 |  |  |  |
| Tl-194m | 1,00E+06 | 1,00E+01 |  |  |  |
| Tl-195 | 1,00E+06 | 1,00E+01 |  |  |  |
| Tl-197 | 1,00E+06 | 1,00E+02 |  |  |  |
| Tl-198 | 1,00E+06 | 1,00E+01 |  |  |  |
| Tl-198m | 1,00E+06 | 1,00E+01 |  |  |  |
| Tl-199 | 1,00E+06 | 1,00E+02 |  |  |  |
| Tl-200 | 1,00E+06 | 1,00E+01 | 9,00E+09 | 1,00E+01 | 1,00E+00 |
| Tl-201 | 1,00E+06 | 1,00E+02 | 1,00E+11 | 1,00E+02 | 1,00E+01 |
| Tl-202 | 1,00E+06 | 1,00E+02 | 2,00E+10 | 1,00E+011) | 1,00E+01 |
| Tl-204 | 1,00E+04 | 1,00E+04 | 1,00E+11 | 1,00E+00 | 1,00E+02 |
| **1** | **2** | **3** | **3a** | **4** | **5** |
| Pb-195m | 1,00E+06 | 1,00E+01 |  |  |  |
| Pb-198 | 1,00E+06 | 1,00E+02 |  |  |  |
| Pb-199 | 1,00E+06 | 1,00E+01 |  |  |  |
| Pb-200 | 1,00E+06 | 1,00E+02 |  |  |  |
| Pb-201 | 1,00E+06 | 1,00E+01 |  |  |  |
| Pb-202 | 1,00E+06 | 1,00E+03 |  |  |  |
| Pb-202m | 1,00E+06 | 1,00E+01 |  |  |  |
| Pb-203 | 1,00E+06 | 1,00E+02 | 4,00E+10 | 1,00E+01 | 1,00E+01 |
| Pb-205 | 1,00E+07 | 1,00E+04 |  |  |  |
| Pb-209 | 1,00E+06 | 1,00E+05 |  |  |  |
| Pb210+ |  |  |  | 3,00E-02 | 1,00E+00 |
| Pb-210++ | 1,00E+04 | 1,00E+01 | 1,00E+10 | 2,00E-02 | 1,00E+00 |
| Pb-211 | 1,00E+06 | 1,00E+02 |  |  |  |
| Pb-212 | 1,00E+07 | 1,00E+02 |  | 1,00E+01 | 1,00E+00 |
| Pb-212+ | 1,00E+05 | 1,00E+01 | 7,00E+09 |  | 1,00E+00 |
| Pb-214 | 1,00E+06 | 1,00E+02 |  |  |  |
| Bi-200 | 1,00E+06 | 1,00E+01 |  |  |  |
| Bi-201 | 1,00E+06 | 1,00E+01 |  |  |  |
| Bi-202 | 1,00E+06 | 1,00E+01 |  |  |  |
| Bi-203 | 1,00E+06 | 1,00E+01 |  |  |  |
| Bi-205 | 1,00E+06 | 1,00E+01 |  |  |  |
| Bi-206 | 1,00E+05 | 1,00E+01 | 3,00E+09 | 1,00E+00 | 1,00E+00 |
| Bi-207 | 1,00E+06 | 1,00E+01 | 7,00E+09 | 1,00E-01 | 1,00E+00 |
| Bi-210 | 1,00E+06 | 1,00E+03 | 1,00E+10 | 1,00E+03 | 1,00E+02 |
| Bi-210m | 1,00E+05 | 1,00E+01 | 6,00E+09 |  |  |
| Bi-212 |  |  |  |  |  |
| Bi-212+ | 1,00E+05 | 1,00E+01 | 7,00E+09 | 1,00E+01 | 1,00E+00 |
| Bi-213 | 1,00E+06 | 1,00E+02 |  |  |  |
| Bi-214 | 1,00E+05 | 1,00E+01 |  |  |  |
| Po-203 | 1,00E+06 | 1,00E+01 |  | 1,00E+01 | 1,00E+00 |
| Po-205 | 1,00E+06 | 1,00E+01 |  | 1,00E+01 | 1,00E+00 |
| Po-206 | 1,00E+06 | 1,00E+01 |  |  |  |
| Po-207 | 1,00E+06 | 1,00E+01 |  | 1,00E+01 | 1,00E+00 |
| Po-208 | 1,00E+04 | 1,00E+01 |  |  |  |
| Po-209 | 1,00E+04 | 1,00E+01 |  |  |  |
| Po-210 | 1,00E+04 | 1,00E+01 | 4,00E+11 | 4,00E-02 | 1,00E+00 |
| At-207 | 1,00E+06 | 1,00E+01 |  |  |  |
| At-211 | 1,00E+07 | 1,00E+03 | 2,00E+11 | 1,00E+03 | 1,00E+01 |
| Rn-220+ | 1,00E+07 | 1,00E+04 |  |  |  |
| Rn-222+ | 1,00E+08 | 1,00E+01 | 3,00E+09 |  |  |
| Fr-222 | 1,00E+05 | 1,00E+03 |  |  |  |
| Fr-223 | 1,00E+06 | 1,00E+02 |  |  |  |
| Ra-223+ | 1,00E+05 | 1,00E+02 | 4,00E+09 | 5,00E-01 | 1,00E+00 |
| Ra-224 |  |  |  |  |  |
| Ra-224+ | 1,00E+05 | 1,00E+01 | 4,00E+09 | 1,00E+01 | 1,00E+00 |
| Ra-225 | 1,00E+05 | 1,00E+02 | 2,00E+09 | 1,00E+01 | 1,00E-01 |
| Ra-226+ |  |  |  | 3,00E-02 | 1,00E+00 |
| Ra-226++ | 1,00E+04 | 1,00E+01 | 4,00E+10 | 1,00E-02 | 1,00E+00 |
| Ra-227 | 1,00E+06 | 1,00E+02 |  | 1,00E+02 | 1,00E+01 |
| Ra-228+ | 1,00E+05 | 1,00E+01 | 6,00E+09 | 7,00E-02 | 1,00E+00 |
| Ac-224 | 1,00E+06 | 1,00E+02 |  |  |  |
| Ac-225+ | 1,00E+04 | 1,00E+01 |  |  |  |
| Ac-226 | 1,00E+05 | 1,00E+02 |  |  |  |
| Ac-227+ | 1,00E+03 | 1,00E-01 |  | 1,00E-01 | 1,00E+00 |
| Ac-227++ |  |  |  | 7,00E-03 | 1,00E+00 |
| Ac-228 | 1,00E+06 | 1,00E+01 | 6,00E+09 | 1,00E+01 | 1,00E+00 |
| Th-226 |  |  |  | 1,00E+03 |  |
| Th-226+ | 1,00E+07 | 1,00E+03 |  | 1,00E+03 | 1,00E+01 |
| Th-227 | 1,00E+04 | 1,00E+01 | 1,00E+11 | 2,00E-01 | 1,00E-01 |
| Th-228+ | 1,00E+04 | 1,00E+00 | 5,00E+09 | 1,00E-01 | 1,00E-01 |
| Th-229+ | 1,00E+03 | 1,00E+00 | 5,00E+10 | 1,00E-01 | 1,00E-01 |
| Th-230 | 1,00E+04 | 1,00E+00 | 1,00E+11 | 5,00E-02 | 1,00E-01 |
| Th-231 | 1,00E+07 | 1,00E+03 | 4,00E+11 | 1,00E+03 | 1,00E+02 |
| **1** | **2** | **3** | **3a** | **4** | **5** |
| Th-232 | 1,00E+04 | 1,00E+01 |  | 3,00E-02 | 1,00E-01 |
| Th-232sec | 1,00E+03 | 1,00E+00 |  | 2,00E-02 | 1,00E-01 |
| Th-234+ | 1,00E+05 | 1,00E+03 | 3,00E+09 | 1,00E+01 | 1,00E+02 |
| Pa-227 | 1,00E+06 | 1,00E+03 |  |  |  |
| Pa-228 | 1,00E+06 | 1,00E+01 |  |  |  |
| Pa-230 | 1,00E+06 | 1,00E+01 | 2,00E+10 | 1,00E+01 | 1,00E+00 |
| Pa-231 | 1,00E+03 | 1,00E+00 | 4,00E+10 | 7,00E-03 | 1,00E-02 |
| Pa-232 | 1,00E+06 | 1,00E+01 |  |  |  |
| Pa-233 | 1,00E+07 | 1,00E+02 | 5,00E+10 | 1,00E+01 | 1,00E+01 |
| Pa-234 | 1,00E+06 | 1,00E+01 |  |  |  |
| U-230+ (M) b) | 1,00E+05 | 1,00E+01 | 4,00E+11 | 1,00E+01 | 1,00E-01 |
| U-230+ (S) c) | 1,00E+05 | 1,00E+01 | 3,00E+11 | 1,00E+01 | 1,00E-01 |
| U-231 | 1,00E+07 | 1,00E+02 |  | 1,00E+02 | 1,00E+01 |
| U-232 (M) b) | 1,00E+04 | 1,00E+01 | 4,00E+11 | 1,00E-01 | 1,00E-01 |
| U-232 (S) c) | 1,00E+04 | 1,00E+01 | 1,00E+11 | 1,00E-01 | 1,00E-01 |
| U-232+ | 1,00E+03 | 1,00E+00 |  | 4,00E-02 | 1,00E-01 |
| U-233 | 1,00E+04 | 1,00E+01 | 4,00E+11 | 1,00E+00 | 1,00E+00 |
| U-234 | 1,00E+04 | 1,00E+01 | 4,00E+11 | 5,00E-01 | 1,00E+00 |
| U-235+ | 1,00E+04 | 1,00E+01 |  | 3,00E-011) | 1,00E+00 |
| U-236 | 1,00E+04 | 1,00E+01 | 4,00E+11 | 1,00E+01 | 1,00E+00 |
| U-237 | 1,00E+06 | 1,00E+02 |  | 1,00E+02 | 1,00E+01 |
| U-238+ | 1,00E+04 | 1,00E+01 |  | 6,00E-01 | 1,00E+00 |
| U-238 sec | 1,00E+03 | 1,00E+00 |  | 9,00E-03 | 1,00E+00 |
| U-239 | 1,00E+06 | 1,00E+02 |  | 1,00E+02 | 1,00E+02 |
| U-240 | 1,00E+07 | 1,00E+03 |  | 1,00E+02 | 1,00E+01 |
| U-240+ | 1,00E+06 | 1,00E+01 |  |  |  |
| Np-232 | 1,00E+06 | 1,00E+01 |  |  |  |
| Np-233 | 1,00E+07 | 1,00E+02 |  |  |  |
| Np-234 | 1,00E+06 | 1,00E+01 |  |  |  |
| Np-235 | 1,00E+07 | 1,00E+03 |  |  |  |
| Np-236 | 1,00E+07 | 1,00E+03 |  |  |  |
| Np-236m | 1,00E+05 | 1,00E+02 |  |  |  |
| Np-237+ | 1,00E+03 | 1,00E+00 | 2,00E+11 | 1,00E+00 | 1,00E-01 |
| Np-238 | 1,00E+06 | 1,00E+02 |  |  |  |
| Np-239 | 1,00E+07 | 1,00E+02 | 7,00E+10 | 1,00E+02 | 1,00E+01 |
| Np-240 | 1,00E+06 | 1,00E+01 |  | 1,00E+01 | 1,00E+00 |
| Pu-234 | 1,00E+07 | 1,00E+02 |  | 1,00E+02 | 1,00E+01 |
| Pu-235 | 1,00E+07 | 1,00E+02 |  | 1,00E+02 | 1,00E+01 |
| Pu-236 | 1,00E+04 | 1,00E+01 | 3,00E+11 | 1,00E+00 | 1,00E-01 |
| Pu-237 | 1,00E+07 | 1,00E+03 | 2,00E+11 | 1,00E+021) | 1,00E+02 |
| Pu-238 | 1,00E+04 | 1,00E+00 | 6,00E+10 | 1,00E-01 | 1,00E-01 |
| Pu-239 d) | 1,00E+04 | 1,00E+00 | 6,00E+10 | 1,00E-01 | 1,00E-01 |
| Pu-240 | 1,00E+03 | 1,00E+00 | 1,00E+11 | 1,00E-01 | 1,00E-01 |
| Pu-241 | 1,00E+05 | 1,00E+02 | 4,00E+11 | 1,00E+01 | 1,00E+01 |
| Pu-242 | 1,00E+04 | 1,00E+00 | 1,00E+11 | 1,00E-01 | 1,00E-01 |
| Pu-243 | 1,00E+07 | 1,00E+03 |  | 1,00E+03 | 1,00E+02 |
| Pu-244+ | 1,00E+04 | 1,00E+00 | 4,00E+09 | 1,00E-01 | 1,00E-01 |
| Pu-245 | 1,00E+06 | 1,00E+02 |  |  |  |
| Pu-246 | 1,00E+06 | 1,00E+02 |  |  |  |
| Am-237 | 1,00E+06 | 1,00E+02 |  |  |  |
| Am-238 | 1,00E+06 | 1,00E+01 |  |  |  |
| Am-239 | 1,00E+06 | 1,00E+02 |  |  |  |
| Am-240 | 1,00E+06 | 1,00E+01 |  |  |  |
| Am-241a) | 1,00E+04 | 1,00E+00 | 6,00E+10 | 1,00E-01 | 1,00E-01 |
| Am-242 | 1,00E+06 | 1,00E+03 |  | 1,00E+03 | 1,00E+02 |
| Am242m+ | 1,00E+04 | 1,00E+00 | 1,00E+11 | 1,00E-01 | 1,00E-01 |
| Am-243+ | 1,00E+03 | 1,00E+00 | 5,00E+10 | 1,00E-01 | 1,00E-01 |
| Am-244 | 1,00E+06 | 1,00E+01 |  |  |  |
| Am-244m | 1,00E+07 | 1,00E+04 |  |  |  |
| Am-245 | 1,00E+06 | 1,00E+03 |  |  |  |
| Am-246 | 1,00E+05 | 1,00E+01 |  |  |  |
| Am-246m | 1,00E+06 | 1,00E+01 |  |  |  |
| **1** | **2** | **3** | **3a** | **4** | **5** |
| Cm-238 | 1,00E+07 | 1,00E+02 |  |  |  |
| Cm-240 | 1,00E+05 | 1,00E+02 |  |  |  |
| Cm-241 | 1,00E+06 | 1,00E+02 |  |  |  |
| Cm-242 | 1,00E+05 | 1,00E+02 | 4,00E+11 | 1,00E+01 | 1,00E+00 |
| Cm-243 | 1,00E+04 | 1,00E+00 | 9,00E+10 | 1,00E+00 | 1,00E-01 |
| Cm-244 | 1,00E+04 | 1,00E+01 | 5,00E+10 | 1,00E+00 | 1,00E-01 |
| Cm-245 | 1,00E+03 | 1,00E+00 | 9,00E+10 | 1,00E-01 | 1,00E-01 |
| Cm-246 | 1,00E+03 | 1,00E+00 | 9,00E+10 | 1,00E-01 | 1,00E-01 |
| Cm-247+ | 1,00E+04 | 1,00E+00 | 3,00E+10 | 1,00E-01 | 1,00E-01 |
| Cm-248 | 1,00E+03 | 1,00E+00 | 2,00E+08 | 1,00E-01 | 1,00E-02 |
| Cm-249 | 1,00E+06 | 1,00E+03 |  |  |  |
| Cm-250 | 1,00E+03 | 1,00E-01 |  |  |  |
| Bk-245 | 1,00E+06 | 1,00E+02 |  |  |  |
| Bk-246 | 1,00E+06 | 1,00E+01 |  |  |  |
| Bk-247 | 1,00E+04 | 1,00E+00 |  |  |  |
| Bk-249 | 1,00E+06 | 1,00E+03 | 4,00E+11 | 1,00E+02 | 1,00E+01 |
| Bk-250 | 1,00E+06 | 1,00E+01 |  |  |  |
| Cf-244 | 1,00E+07 | 1,00E+04 |  |  |  |
| Cf-246 | 1,00E+06 | 1,00E+03 |  | 1,00E+03 | 1,00E+01 |
| Cf-248 | 1,00E+04 | 1,00E+01 | 4,00E+11 | 1,00E+00 | 1,00E+00 |
| Cf-249 | 1,00E+03 | 1,00E+00 | 3,00E+10 | 1,00E-01 | 1,00E-01 |
| Cf-250 | 1,00E+04 | 1,00E+01 | 2,00E+11 | 1,00E+00 | 1,00E-01 |
| Cf-251 | 1,00E+03 | 1,00E+00 | 7,00E+10 | 1,00E-01 | 1,00E-01 |
| Cf-252 | 1,00E+04 | 1,00E+01 | 2,00E+10 | 1,00E+00 | 1,00E-01 |
| Cf-253+ | 1,00E+05 | 1,00E+02 | 4,00E+11 | 1,00E+02 | 1,00E+00 |
| Cf-254 | 1,00E+03 | 1,00E+00 | 1,00E+07 | 1,00E+00 | 1,00E-01 |
| Es-250 | 1,00E+06 | 1,00E+02 |  |  |  |
| Es-251 | 1,00E+07 | 1,00E+02 |  |  |  |
| Es-253 | 1,00E+05 | 1,00E+02 |  | 1,00E+02 | 1,00E+00 |
| Es-254+ | 1,00E+04 | 1,00E+01 |  | 1,00E-01 | 1,00E+00 |
| Es-254m | 1,00E+06 | 1,00E+02 |  | 1,00E+01 |  |
| Es-254m+ | 1,00E+06 | 1,00E+02 |  | 1,00E+01 | 1,00E+00 |
| Fm-252 | 1,00E+06 | 1,00E+03 |  |  |  |
| Fm-253 | 1,00E+06 | 1,00E+02 |  |  |  |
| Fm-254 | 1,00E+07 | 1,00E+04 |  | 1,00E+04 | 1,00E+02 |
| Fm-255 | 1,00E+06 | 1,00E+03 |  | 1,00E+02 | 1,00E+01 |
| Fm-257 | 1,00E+05 | 1,00E+01 |  |  |  |
| Md-257 | 1,00E+07 | 1,00E+02 |  |  |  |
| Md-258 | 1,00E+05 | 1,00E+02 |  |  |  |

Poznámka:

Rádionuklidy uvedené v tabuľke č. 1 s príponou +, ++, sec sú materské rádionuklidy v rovnováhe s ich dcérskymi rádionuklidmi. V tom prípade sa hodnoty aktivít a hmotnostných aktivít vzťahujú nielen na tieto rádionuklidy samotné, ale reprezentujú tieto rádionuklidy v rovnováhe s tými ich produktmi rádioaktívnej premeny, ktoré sú uvedené v tabuľke č. 2 stĺpec 2.

Za malé množstvo rádioaktívneho materiálu sa považuje množstvo menšie ako 1 tona.

a) prírodný rádionuklid, uvoľňovanie nie je obmedzené.

b) urán v chemickej forme UO3, UF4, UCl4 a v hexavalentných zlúčeninách.

c) urán v chemickej forme a zlúčeninách iných ako je uvedené v c).

d) zahŕňa aj neutrónové žiariče s berýliom.

Tabuľka č. 2 **Materské rádionuklidy, ktorých hodnoty aktivity a hmotnostnej aktivity uvedené v tabuľke č. 1 sú v rádioaktívnej rovnováhe s produktmi ich rádioaktívnej premeny**

|  |  |
| --- | --- |
| **Materský rádionuklid** | **Zahrnuté produkty rádioaktívnej premeny** |
| Mg-28+ | Al-28 |
| Ca-47+ | Sc-47 |
| Ti-44+ | Sc-44 |
| Fe-60+ | Co-60m |
| Zn-69m+ | Zn-69 |
| Ge-68+ | Ga-68 |
| Rb-83+ | Kr-83m |
| Sr-82+ | Rb-82 |
| Sr-90+ | Y-90 |
| Y-87+ | Sr-87m |
| Zr-93+ | Nb-93m |
| Zr-97+ | Nb-97, Nb-97m |
| Mo-101+ | Tc-100 |
| Tc-95m+ | Tc-95 |
| Ru-103+ | Rh-102m |
| Ru-106+ | Rh-106 |
| Pd-103+ | Rh-106 |
| Ag-108m+ | Ag-108 |
| Ag-110m+ | Ag-110 |
| Cd-109+ | Ag-109m |
| Cd-115m+ | In-115m |
| In-114m+ | In-114 |
| Sn-113+ | In-113m |
| Sn-121m+ | Sn-121 |
| Sn-126+ | Sb-126m |
| Sb-125+ | Te-125m |
| Te-127m+ | Te-127 |
| Te-129m+ | Te-129 |
| Te-131m+ | Te-131 |
| Te-133m+ | Te-133 |
| I-133+ | Xe-133, Xe-133m |
| I-135+ | Xe-135, Xe-135m |
| Xe-122+ | I-122 |
| Cs-137+ | Ba-137m |
| Ba-131+ | Cs-131 |
| Ba-140+ | La-140 |
| Ce-144+ | Pr-144, Pr-144m |
| Pm-148m+ | Pm-148 |
| Gd-146+ | Eu-146 |
| Dy-166+ | Ho-166 |
| Hf-172+ | Lu-172 |
| W-178+ | Ta-178 |
| W-188+ | Re-188 |
| Re-189+ | Os-189m |
| Os-194+ | Ir-194 |
| Ir-189 | Os-189m |
| Ir-190+ | Os-190m |
| Pt-188+ | Ir-188 |
| Hg-194+ | Au-194 |
| Hg-195m+ | Hg-195 |
| Pb-210+ | Bi-210 |
| Pb-210++ | Bi-210, Po-210 |
| Pb-212+ | Bi-212, Tl-208, Po-212 |
| Bi-212+ | Tl-208, Po-212 |
| Rn-220+ | Po-216 |
| Rn-222+ | Po-218, Pb-214, Bi-214, Po-214 |
| Ra-223+ | Rn-219, Po-215, Pb-211, Bi-211, Tl-207, Po-211 |
| Ra-224+ | Rn-220, Po-216, Pb-212, Bi-212, Tl-208, Po-212 |
| **Materský rádionuklid** | **Zahrnuté produkty rádioaktívnej premeny** |
| Ra-226 | Rn-222, Po-218, Pb-214, Bi-214, Po-214 |
| Ra-226++ | Rn-222, Po-218, Pb-214, Bi-14, Pb-210, Bi-210, Po-210, Po-214 Ra-228+ Ac-228 |
| Ac-225+ | Fr-221, At-217, Bi-213, Po-213, Tl-209, Pb-209 |
| Ac-227+ | Fr-223 |
| Ac-227++ | Fr-223, Th-227, Ra-223, Rn-219, Po-215, Pb-211, Bi-211, Tl-207, Po-211 |
| Th-226+ | Ra-222, Rn-218, Po-214 |
| Th-228+ | Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208, Po-212 |
| Th-229+ | Ra-225, Ac-225, Fr-221, At-217, Bi-213, Tl-209, Po-213, Pb-209 |
| Th-232sec | Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208, Po-212 |
| Th-234+ | Pa-234m, Pa-234 |
| U-230+ | Th-226, Ra-222, Rn-218, Po-214 |
| U-232+ | Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208, Po-212 |
| U-235+ | Th-231 |
| U-238+ | Th-234, Pa-234m, Pa-234 |
| U-238sec | Th-234, Pa-234m, U-234, Th-230, Ra-226, Rn-222, Po-218, Pb-214, Bi-214, Pb-210, Bi-210, Po-210, Po-214 |
| U-240+ | Np-240, Np-240m |
| Np-237+ | Pa-233 |
| Pu-244+ | U-240, Np-240m, Np-240 |
| Am-242m+ | Np-238, Am-242 |
| Am-243+ | Np-239 |
| Cm-247+ | Pu-243 |
| Cf-253+ | Cm-249 |
| Es-254+ | Bk-250 |
| Es-254m+ | Bk-250, Fm-254 |

Tabuľka č. 3 Najvyššie prípustné hodnoty povrchovej rádioaktívnej kontaminácie na pracovisku so zdrojmi ionizujúceho žiarenia

|  |  |  |
| --- | --- | --- |
| Miesto rádioaktívnej kontaminácie | Typ rádioaktívneho žiariča | Plošná aktivita  (Bq.cm-2) |
| Povrchy podláh, stien, stropov, nábytku, zariadenia a podobne v kontrolovanom pásme pracovísk.  Vonkajšie povrchy osobných ochranných pracovných prostriedkov. | Rádioaktívny žiarič emitujúci žiarenie beta alebo gama a nízko toxický rádioaktívny žiarič emitujúci žiarenie alfa | 4,00 |
| Iný rádioaktívny žiarič emitujúci žiarenie alfa | 0,40 |
| Povrch tela a vnútorné povrchy osobných ochranných pracovných prostriedkov.  Pracovné povrchy mimo kontrolované pásmo. | Rádioaktívny žiarič emitujúci žiarenie beta alebo gama a nízko toxický rádioaktívny žiarič emitujúci žiarenie alfa | 0,40 |
| Iný rádioaktívny žiarič emitujúci žiarenie alfa | 0,04 |

Poznámka:

Nízko toxický rádioaktívny žiarič emitujúci žiarenie alfa je:

1. prírodný urán, ochudobnený urán, prírodné tórium, Th-228, Th-230, Th-232, U-235 a U-238 obsiahnuté v rudách alebo chemických koncentrátoch,
2. rádioaktívny žiarič emitujúci žiarenie alfa s polčasom premeny kratším ako 10 dní.

Hodnoty plošnej aktivity povrchovej rádioaktívnej kontaminácie sa vzťahujú na nefixovanú kontamináciu, pokiaľ povrchová kontaminácia povrchu podláh, stien, stropov, nábytku a iného zariadenia v kontrolovanom pásme pracoviska vznikla v dôsledku predvídaných spôsobov používania zdroja ionizujúceho žiarenia.