

SHIPMENT OF LIMITED QUANTITIES OF RADIOISOTOPES

PURPOSE

This procedure contains instructions and check lists to assure compliance with federal and international regulations for transfer or commercial shipment of limited quantities of radioisotopes to other licensees.

POLICY

Radioactive materials may be transferred or shipped to another licensee only after verification that all licensing, transfer, packaging, labeling and transportation requirements have been met. To assure that all requirements are met, and that appropriate records are maintained, a check list must be prepared by the individual responsible for the shipment and approved by the RSO before the shipment is made.

PROCEDURES

1. The person planning to transfer radioactive material to any individual or institution that is not under the University's license must first ascertain whether the material is a "limited quantity". For shipment of larger quantities, obtain authorization from the RSO and follow the instructions in "TRANSPORTATION OF RADIOACTIVE MATERIAL" (RPR 55).
2. Before packaging or labeling the material, complete "RADIOISOTOPE LIMITED QUANTITY CHECK LIST" (RPR 14LQ).
3. Prior to shipment, the RSO's designee must verify the license status and shipping address of the receiver, and approve the packaging and contamination survey.
4. International shipments may require additional labels or markings. The RSO's designee can help assure all requirements are met.

AIRBORNE SHIPMENTS

The only radioactive materials that may be transported on a passenger-carrying aircraft are those intended for use in, or incident to, research or medical diagnosis or treatment.

DEFINITIONS - USDOT [References to 49 CFR]

Radioactive Material: Any material containing radionuclides where both the activity concentration and the total activity in the consignment exceed the values specified in Table 1.

Limited Quantity of Radioactive Material: A package that is exempt from specific packaging and labeling requirements because they contain no more than the following:

Solids (any form): 0.001 A₁ or A₂

Liquids (except tritiated water): 0.0001 A₂

Additional limits are provided in 173.425.

Flammable Liquid: Any liquid having a flash point below 100°F. [173.120(a)].

Limited Quantity of Flammable Liquid: Flammable liquids in individual containers having a capacity of not over 0.5 L (1 pint) each, packed in strong outside containers, are exempt from the labeling and specification packaging requirements [173.150(b)].

Contamination Limits: Removable contamination on the surfaces of any package shall be determined by wiping an area of 300 cm². The level of removable contamination shall be kept as low as reasonably achievable but shall not exceed a measured activity of 4 Bq/cm² (220 dpm/cm²) for beta, gamma, or low toxicity alpha emitters or 0.4 Bq/cm² (22 dpm/cm²) for other alpha emitters. [173.443].

Shipping Paper: A shipping order, bill of lading, manifest or other shipping document serving a similar purpose and containing the information required by 172.200-204.

Attachments

RPR 14LQ. RADIOISOTOPE LIMITED QUANTITY SHIPMENT

RPR 14IS. INTERNATIONAL EXCEPTED QUANTITY SHIPMENT

Table 1. Exempt Material Activity concentrations and exempt consignment activity limits for Radionuclides.

Symbol of radionuclide	Element and atomic number	Activity concentration for exempt material (Bq/g)	Activity concentration for exempt material (Ci/g)	Activity limit for exempt consignment (Bq)	Activity limit for exempt consignment (Ci)
Ac-225	Actinium (89)	1.0×10^1	2.7×10^{-10}	1.0×10^4	2.7×10^{-7}
Ac-227		1.0×10^{-1}	2.7×10^{-12}	1.0×10^3	2.7×10^{-8}
Ac-228		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Ag-105	Silver (47)	1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Ag-108m (b)		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Ag-110m		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Ag-111	Aluminum (13)	1.0×10^3	2.7×10^{-8}	1.0×10^6	2.7×10^{-5}
Al-26		1.0×10^1	2.7×10^{-10}	1.0×10^5	2.7×10^{-6}
Am-241		1.0	2.7×10^{-11}	1.0×10^4	2.7×10^{-7}
Am-242m (b)	Americium (95)	1.0	2.7×10^{-11}	1.0×10^4	2.7×10^{-7}
Am-243 (b)		1.0	2.7×10^{-11}	1.0×10^3	2.7×10^{-8}
Ar-37		1.0×10^6	2.7×10^{-5}	1.0×10^8	2.7×10^{-3}
Ar-39	Argon (18)	1.0×10^7	2.7×10^{-4}	1.0×10^4	2.7×10^{-7}
Ar-41		1.0×10^2	2.7×10^{-9}	1.0×10^9	2.7×10^{-2}
As-72		1.0×10^1	2.7×10^{-10}	1.0×10^5	2.7×10^{-6}
As-73	Arsenic (33)	1.0×10^3	2.7×10^{-8}	1.0×10^7	2.7×10^{-4}
As-74		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
As-76		1.0×10^2	2.7×10^{-9}	1.0×10^5	2.7×10^{-6}
As-77	Astatine (85)	1.0×10^3	2.7×10^{-8}	1.0×10^6	2.7×10^{-5}
At-211		1.0×10^3	2.7×10^{-8}	1.0×10^7	2.7×10^{-4}
Au-193		1.0×10^2	2.7×10^{-9}	1.0×10^7	2.7×10^{-4}
Au-194	Gold (79)	1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Au-195		1.0×10^2	2.7×10^{-9}	1.0×10^7	2.7×10^{-4}
Au-198		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Au-199	Barium (56)	1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Ba-131		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Ba-133		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Ba-133m	Beryllium (4)	1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Ba-140 (b)		1.0×10^1	2.7×10^{-10}	1.0×10^5	2.7×10^{-6}
Be-7		1.0×10^3	2.7×10^{-8}	1.0×10^7	2.7×10^{-4}
Be-10	Bismuth (83)	1.0×10^4	2.7×10^{-7}	1.0×10^6	2.7×10^{-5}
Bi-205		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Bi-206		1.0×10^1	2.7×10^{-10}	1.0×10^5	2.7×10^{-6}
Bi-207		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Bi-210		1.0×10^3	2.7×10^{-8}	1.0×10^6	2.7×10^{-5}
Bi-210m		1.0×10^1	2.7×10^{-10}	1.0×10^5	2.7×10^{-6}
Bi-212 (b)	Berkelium (97)	1.0×10^1	2.7×10^{-10}	1.0×10^5	2.7×10^{-6}
Bk-247		1.0	2.7×10^{-11}	1.0×10^4	2.7×10^{-7}
Bk-249		1.0×10^3	2.7×10^{-8}	1.0×10^6	2.7×10^{-5}
Br-76	Bromine (35)	1.0×10^1	2.7×10^{-10}	1.0×10^5	2.7×10^{-6}
Br-77		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Br-82		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
C-11	Carbon (6)	1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
C-14		1.0×10^4	2.7×10^{-7}	1.0×10^7	2.7×10^{-4}
Ca-41		1.0×10^5	2.7×10^{-6}	1.0×10^7	2.7×10^{-4}
Ca-45	Calcium (20)	1.0×10^4	2.7×10^{-7}	1.0×10^7	2.7×10^{-4}
Ca-47		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Cd-109		1.0×10^4	2.7×10^{-7}	1.0×10^6	2.7×10^{-5}
Cd-113m	Cadmium (48)	1.0×10^3	2.7×10^{-8}	1.0×10^6	2.7×10^{-5}
Cd-115		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Cd-115m		1.0×10^3	2.7×10^{-8}	1.0×10^6	2.7×10^{-5}
Ce-139	Cerium (58)	1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Ce-141		1.0×10^2	2.7×10^{-9}	1.0×10^7	2.7×10^{-4}
Ce-143		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Ce-144 (b)		1.0×10^2	2.7×10^{-9}	1.0×10^5	2.7×10^{-6}

Symbol of radionuclide	Element and atomic number	Activity concentration for exempt material (Bq/g)	Activity concentration for exempt material (Ci/g)	Activity limit for exempt consignment (Bq)	Activity limit for exempt consignment (Ci)
Cf-248	Californium (98)	$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_4$	$2.7 \times 10_{-7}$
Cf-249		1.0	$2.7 \times 10_{-11}$	$1.0 \times 10_3$	$2.7 \times 10_{-8}$
Cf-250		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_4$	$2.7 \times 10_{-7}$
Cf-251		1.0	$2.7 \times 10_{-11}$	$1.0 \times 10_3$	$2.7 \times 10_{-8}$
Cf-252		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_4$	$2.7 \times 10_{-7}$
Cf-253		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$
Cf-254	Chlorine (17)	1.0	$2.7 \times 10_{-11}$	$1.0 \times 10_3$	$2.7 \times 10_{-8}$
Cl-36		$1.0 \times 10_4$	$2.7 \times 10_{-7}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Cl-38		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$
Cm-240		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$
Cm-241	Curium (96)	$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Cm-242		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$
Cm-243		1.0	$2.7 \times 10_{-11}$	$1.0 \times 10_4$	$2.7 \times 10_{-7}$
Cm-244		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_4$	$2.7 \times 10_{-7}$
Cm-245		1.0	$2.7 \times 10_{-11}$	$1.0 \times 10_3$	$2.7 \times 10_{-8}$
Cm-246		1.0	$2.7 \times 10_{-11}$	$1.0 \times 10_3$	$2.7 \times 10_{-8}$
Cm-247		1.0	$2.7 \times 10_{-11}$	$1.0 \times 10_4$	$2.7 \times 10_{-7}$
Cm-248		1.0	$2.7 \times 10_{-11}$	$1.0 \times 10_3$	$2.7 \times 10_{-8}$
Co-55	Cobalt (27)	$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Co-56		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$
Co-57		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Co-58		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Co-58m		$1.0 \times 10_4$	$2.7 \times 10_{-7}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Co-60		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$
Cr-51	Chromium (24)	$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Cs-129	Cesium (55)	$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$
Cs-131		$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Cs-132		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$
Cs-134		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_4$	$2.7 \times 10_{-7}$
Cs-134m		$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$
Cs-135		$1.0 \times 10_4$	$2.7 \times 10_{-7}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Cs-136		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$
Cs-137 (b)		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_4$	$2.7 \times 10_{-7}$
Cu-64		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Cu-67		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Dy-159	Dysprosium (66)	$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Dy-165		$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Dy-166		$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Er-169	Erbium (68)	$1.0 \times 10_4$	$2.7 \times 10_{-7}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Er-171		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Eu-147	Europium (63)	$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Eu-148		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Eu-149		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Eu-150 (short lived)		$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Eu-150 (long lived)		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Eu-152		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Eu-152m		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Eu-154		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Eu-155		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Eu-156		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
F-18	Fluorine (9)	$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Fe-52	Iron (26)	$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Fe-55		$1.0 \times 10_4$	$2.7 \times 10_{-7}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Fe-59		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Fe-60		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$
Ga-67	Gallium (31)	$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Ga-68		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$
Ga-72		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$

Symbol of radionuclide	Element and atomic number	Activity concentration for exempt material (Bq/g)	Activity concentration for exempt material (Ci/g)	Activity limit for exempt consignment (Bq)	Activity limit for exempt consignment (Ci)
Gd-146	Gadolinium (64)	1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁶	2.7×10 ⁻⁵
Gd-148		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁴	2.7×10 ⁻⁷
Gd-153		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁷	2.7×10 ⁻⁴
Gd-159	Germanium (32)	1.0×10 ³	2.7×10 ⁻⁸	1.0×10 ⁶	2.7×10 ⁻⁵
Ge-68		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁵	2.7×10 ⁻⁶
Ge-71		1.0×10 ⁴	2.7×10 ⁻⁷	1.0×10 ⁸	2.7×10 ⁻³
Ge-77	Hafnium (72)	1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁵	2.7×10 ⁻⁶
Hf-172		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁶	2.7×10 ⁻⁵
Hf-175		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁶	2.7×10 ⁻⁵
Hf-181	Mercury (80)	1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁶	2.7×10 ⁻⁵
Hf-182		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁶	2.7×10 ⁻⁵
Hg-194		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁶	2.7×10 ⁻⁵
Hg-195m	Holmium (67)	1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁶	2.7×10 ⁻⁵
Hg-197		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁷	2.7×10 ⁻⁴
Hg-197m		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁶	2.7×10 ⁻⁵
Hg-203	Iodine (53)	1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁵	2.7×10 ⁻⁶
Ho-166		1.0×10 ³	2.7×10 ⁻⁸	1.0×10 ⁵	2.7×10 ⁻⁶
Ho-166m		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁶	2.7×10 ⁻⁵
I-123	Indium (49)	1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁷	2.7×10 ⁻⁴
I-124		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁶	2.7×10 ⁻⁵
I-125		1.0×10 ³	2.7×10 ⁻⁸	1.0×10 ⁶	2.7×10 ⁻⁵
I-126	Iridium (77)	1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁶	2.7×10 ⁻⁵
I-129		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁵	2.7×10 ⁻⁶
I-131		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁶	2.7×10 ⁻⁵
I-132	Potassium (19)	1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁵	2.7×10 ⁻⁶
I-133		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁶	2.7×10 ⁻⁵
I-134		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁵	2.7×10 ⁻⁶
I-135	Krypton (36)	1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁶	2.7×10 ⁻⁵
In-111		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁶	2.7×10 ⁻⁵
In-113m		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁶	2.7×10 ⁻⁵
In-114m	Lanthanum (57)	1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁶	2.7×10 ⁻⁵
In-115m		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁶	2.7×10 ⁻⁵
Ir-189		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁷	2.7×10 ⁻⁴
Ir-190	Lutetium (71)	1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁶	2.7×10 ⁻⁵
Ir-192		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁴	2.7×10 ⁻⁷
Ir-194		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁵	2.7×10 ⁻⁶
K-40	Magnesium (12)	1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁶	2.7×10 ⁻⁵
K-42		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁶	2.7×10 ⁻⁵
K-43		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁶	2.7×10 ⁻⁵
Kr-81	Manganese (25)	1.0×10 ⁴	2.7×10 ⁻⁷	1.0×10 ⁷	2.7×10 ⁻⁴
Kr-85		1.0×10 ⁵	2.7×10 ⁻⁶	1.0×10 ⁴	2.7×10 ⁻⁷
Kr-85m		1.0×10 ³	2.7×10 ⁻⁸	1.0×10 ¹⁰	2.7×10 ⁻¹
Kr-87	Molybdenum (42)	1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁹	2.7×10 ⁻²
La-137		1.0×10 ³	2.7×10 ⁻⁸	1.0×10 ⁷	2.7×10 ⁻⁴
La-140		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁵	2.7×10 ⁻⁶
Lu-172	Nitrogen (7)	1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁶	2.7×10 ⁻⁵
Lu-173		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁷	2.7×10 ⁻⁴
Lu-174		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁷	2.7×10 ⁻⁴
Lu-174m	Oxygen (8)	1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁷	2.7×10 ⁻⁴
Lu-177		1.0×10 ³	2.7×10 ⁻⁸	1.0×10 ⁷	2.7×10 ⁻⁴
Mg-28		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁵	2.7×10 ⁻⁶
Mn-52	Phosphorus (15)	1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁵	2.7×10 ⁻⁶
Mn-53		1.0×10 ⁴	2.7×10 ⁻⁷	1.0×10 ⁹	2.7×10 ⁻²
Mn-54		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁶	2.7×10 ⁻⁵
Mn-56	Sulfur (16)	1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁵	2.7×10 ⁻⁶
Mo-93		1.0×10 ³	2.7×10 ⁻⁸	1.0×10 ⁸	2.7×10 ⁻³
Mo-99		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁶	2.7×10 ⁻⁵
N-13	Technetium (43)	1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁹	2.7×10 ⁻²

Symbol of radionuclide	Element and atomic number	Activity concentration for exempt material (Bq/g)	Activity concentration for exempt material (Ci/g)	Activity limit for exempt consignment (Bq)	Activity limit for exempt consignment (Ci)
Na-22	Sodium (11)	$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Na-24		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$
Nb-93m	Niobium (41)	$1.0 \times 10_4$	$2.7 \times 10_{-7}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Nb-94		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Nb-95		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Nb-97		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Nd-147	Neodymium (60)	$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Nd-149		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Ni-59	Nickel (28)	$1.0 \times 10_4$	$2.7 \times 10_{-7}$	$1.0 \times 10_8$	$2.7 \times 10_{-3}$
Ni-63		$1.0 \times 10_5$	$2.7 \times 10_{-6}$	$1.0 \times 10_8$	$2.7 \times 10_{-3}$
Ni-65		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Np-235	Neptunium (93)	$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Np-236 (short-lived)		$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Np-236 (long-lived)		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$
Np-237 (b)		1.0	$2.7 \times 10_{-11}$	$1.0 \times 10_3$	$2.7 \times 10_{-8}$
Np-239		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Os-185	Osmium (76)	$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Os-191		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Os-191m		$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Os-193		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Os-194		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$
P-32	Phosphorus (15)	$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$
P-33		$1.0 \times 10_5$	$2.7 \times 10_{-6}$	$1.0 \times 10_8$	$2.7 \times 10_{-3}$
Pa-230	Protactinium (91)	$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Pa-231		1.0	$2.7 \times 10_{-11}$	$1.0 \times 10_3$	$2.7 \times 10_{-8}$
Pa-233		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Pb-201	Lead (82)	$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Pb-202		$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Pb-203		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Pb-205		$1.0 \times 10_4$	$2.7 \times 10_{-7}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Pb-210 (b)		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_4$	$2.7 \times 10_{-7}$
Pb-212 (b)		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$
Pd-103	Palladium (46)	$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_8$	$2.7 \times 10_{-3}$
Pd-107		$1.0 \times 10_5$	$2.7 \times 10_{-6}$	$1.0 \times 10_8$	$2.7 \times 10_{-3}$
Pd-109		$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Pm-143	Promethium (61)	$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Pm-144		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Pm-145		$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Pm-147		$1.0 \times 10_4$	$2.7 \times 10_{-7}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Pm-148m		$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Pm-149		$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Pm-151		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Po-210	Polonium (84)	$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_4$	$2.7 \times 10_{-7}$
Pr-142	Praseodymium (59)	$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$
Pr-143		$1.0 \times 10_4$	$2.7 \times 10_{-7}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Pt-188	Platinum (78)	$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Pt-191		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Pt-193		$1.0 \times 10_4$	$2.7 \times 10_{-7}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Pt-193m		$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Pt-195m		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Pt-197		$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Pt-197m		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_6$	$2.7 \times 10_{-5}$
Pu-236	Plutonium (94)	$1.0 \times 10_1$	$2.7 \times 10_{-10}$	$1.0 \times 10_4$	$2.7 \times 10_{-7}$
Pu-237		$1.0 \times 10_3$	$2.7 \times 10_{-8}$	$1.0 \times 10_7$	$2.7 \times 10_{-4}$
Pu-238		1.0	$2.7 \times 10_{-11}$	$1.0 \times 10_4$	$2.7 \times 10_{-7}$
Pu-239		1.0	$2.7 \times 10_{-11}$	$1.0 \times 10_4$	$2.7 \times 10_{-7}$
Pu-240		1.0	$2.7 \times 10_{-11}$	$1.0 \times 10_3$	$2.7 \times 10_{-8}$
Pu-241		$1.0 \times 10_2$	$2.7 \times 10_{-9}$	$1.0 \times 10_5$	$2.7 \times 10_{-6}$

Symbol of radionuclide	Element and atomic number	Activity concentration for exempt material (Bq/g)	Activity concentration for exempt material (Ci/g)	Activity limit for exempt consignment (Bq)	Activity limit for exempt consignment (Ci)
Pu-242		1.0	2.7×10^{-11}	1.0×10^4	2.7×10^{-7}
Pu-244		1.0	2.7×10^{-11}	1.0×10^4	2.7×10^{-7}
Ra-223 (b)	Radium (88)	1.0×10^2	2.7×10^{-9}	1.0×10^5	2.7×10^{-6}
Ra-224 (b)		1.0×10^1	2.7×10^{-10}	1.0×10^5	2.7×10^{-6}
Ra-225		1.0×10^2	2.7×10^{-9}	1.0×10^5	2.7×10^{-6}
Ra-226 (b)		1.0×10^1	2.7×10^{-10}	1.0×10^4	2.7×10^{-7}
Ra-228 (b)		1.0×10^1	2.7×10^{-10}	1.0×10^5	2.7×10^{-6}
Rb-81	Rubidium (37)	1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Rb-83		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Rb-84		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Rb-86		1.0×10^2	2.7×10^{-9}	1.0×10^5	2.7×10^{-6}
Rb-87		1.0×10^4	2.7×10^{-7}	1.0×10^7	2.7×10^{-4}
Rb(nat)		1.0×10^4	2.7×10^{-7}	1.0×10^7	2.7×10^{-4}
Re-184	Rhenium (75)	1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Re-184m		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Re-186		1.0×10^3	2.7×10^{-8}	1.0×10^6	2.7×10^{-5}
Re-187		1.0×10^6	2.7×10^{-5}	1.0×10^9	2.7×10^{-2}
Re-188		1.0×10^2	2.7×10^{-9}	1.0×10^5	2.7×10^{-6}
Re-189		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Re(nat)		1.0×10^6	2.7×10^{-5}	1.0×10^9	2.7×10^{-2}
Rh-99	Rhodium (45)	1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Rh-101		1.0×10^2	2.7×10^{-9}	1.0×10^7	2.7×10^{-4}
Rh-102		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Rh-102m		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Rh-103m		1.0×10^4	2.7×10^{-7}	1.0×10^8	2.7×10^{-3}
Rh-105		1.0×10^2	2.7×10^{-9}	1.0×10^7	2.7×10^{-4}
Rn-222 (b)	Radon (86)	1.0×10^1	2.7×10^{-10}	1.0×10^8	2.7×10^{-3}
Ru-97	Ruthenium (44)	1.0×10^2	2.7×10^{-9}	1.0×10^7	2.7×10^{-4}
Ru-103		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Ru-105		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Ru-106 (b)		1.0×10^2	2.7×10^{-9}	1.0×10^5	2.7×10^{-6}
S-35	Sulphur (16)	1.0×10^5	2.7×10^{-6}	1.0×10^8	2.7×10^{-3}
Sb-122	Antimony (51)	1.0×10^2	2.7×10^{-9}	1.0×10^4	2.7×10^{-7}
Sb-124		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Sb-125		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Sb-126		1.0×10^1	2.7×10^{-10}	1.0×10^5	2.7×10^{-6}
Sc-44	Scandium (21)	1.0×10^1	2.7×10^{-10}	1.0×10^5	2.7×10^{-6}
Sc-46		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Sc-47		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Sc-48		1.0×10^1	2.7×10^{-10}	1.0×10^5	2.7×10^{-6}
Se-75	Selenium (34)	1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Se-79		1.0×10^4	2.7×10^{-7}	1.0×10^7	2.7×10^{-4}
Si-31	Silicon (14)	1.0×10^3	2.7×10^{-8}	1.0×10^6	2.7×10^{-5}
Si-32		1.0×10^3	2.7×10^{-8}	1.0×10^6	2.7×10^{-5}
Sm-145	Samarium (62)	1.0×10^2	2.7×10^{-9}	1.0×10^7	2.7×10^{-4}
Sm-147		1.0×10^1	2.7×10^{-10}	1.0×10^4	2.7×10^{-7}
Sm-151		1.0×10^4	2.7×10^{-7}	1.0×10^8	2.7×10^{-3}
Sm-153		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Sn-113	Tin (50)	1.0×10^3	2.7×10^{-8}	1.0×10^7	2.7×10^{-4}
Sn-117m		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Sn-119m		1.0×10^3	2.7×10^{-8}	1.0×10^7	2.7×10^{-4}
Sn-121m		1.0×10^3	2.7×10^{-8}	1.0×10^7	2.7×10^{-4}
Sn-123		1.0×10^3	2.7×10^{-8}	1.0×10^6	2.7×10^{-5}
Sn-125		1.0×10^2	2.7×10^{-9}	1.0×10^5	2.7×10^{-6}
Sn-126		1.0×10^1	2.7×10^{-10}	1.0×10^5	2.7×10^{-6}
Sr-82	Strontium (38)	1.0×10^1	2.7×10^{-10}	1.0×10^5	2.7×10^{-6}
Sr-85		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Sr-85m		1.0×10^2	2.7×10^{-9}	1.0×10^7	2.7×10^{-4}

Symbol of radionuclide	Element and atomic number	Activity concentration for exempt material (Bq/g)	Activity concentration for exempt material (Ci/g)	Activity limit for exempt consignment (Bq)	Activity limit for exempt consignment (Ci)
Sr-87m		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Sr-89		1.0×10^3	2.7×10^{-8}	1.0×10^6	2.7×10^{-5}
Sr-90 (b)		1.0×10^2	2.7×10^{-9}	1.0×10^4	2.7×10^{-7}
Sr-91		1.0×10^1	2.7×10^{-10}	1.0×10^5	2.7×10^{-6}
Sr-92		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
T(H-3)	Tritium (1)	1.0×10^6	2.7×10^{-5}	1.0×10^9	2.7×10^{-2}
Ta-178 (long-lived)	Tantalum (73)	1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Ta-179		1.0×10^3	2.7×10^{-8}	1.0×10^7	2.7×10^{-4}
Ta-182		1.0×10^1	2.7×10^{-10}	1.0×10^4	2.7×10^{-7}
Tb-157	Terbium (65)	1.0×10^4	2.7×10^{-7}	1.0×10^7	2.7×10^{-4}
Tb-158		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Tb-160		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Tc-95m	Technetium (43)	1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Tc-96		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Tc-96m		1.0×10^3	2.7×10^{-8}	1.0×10^7	2.7×10^{-4}
Tc-97		1.0×10^3	2.7×10^{-8}	1.0×10^8	2.7×10^{-3}
Tc-97m		1.0×10^3	2.7×10^{-8}	1.0×10^7	2.7×10^{-4}
Tc-98		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Tc-99		1.0×10^4	2.7×10^{-7}	1.0×10^7	2.7×10^{-4}
Tc-99m		1.0×10^2	2.7×10^{-9}	1.0×10^7	2.7×10^{-4}
Te-121	Tellurium (52)	1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Te-121m		1.0×10^2	2.7×10^{-9}	1.0×10^5	2.7×10^{-6}
Te-123m		1.0×10^2	2.7×10^{-9}	1.0×10^7	2.7×10^{-4}
Te-125m		1.0×10^3	2.7×10^{-8}	1.0×10^7	2.7×10^{-4}
Te-127		1.0×10^3	2.7×10^{-8}	1.0×10^6	2.7×10^{-5}
Te-127m		1.0×10^3	2.7×10^{-8}	1.0×10^7	2.7×10^{-4}
Te-129		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Te-129m		1.0×10^3	2.7×10^{-8}	1.0×10^6	2.7×10^{-5}
Te-131m		1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Te-132		1.0×10^2	2.7×10^{-9}	1.0×10^7	2.7×10^{-4}
Th-227	Thorium (90)	1.0×10^1	2.7×10^{-10}	1.0×10^4	2.7×10^{-7}
Th-228 (b)		1.0	2.7×10^{-11}	1.0×10^4	2.7×10^{-7}
Th-229 (b)		1.0	2.7×10^{-11}	1.0×10^3	2.7×10^{-8}
Th-230		1.0	2.7×10^{-11}	1.0×10^4	2.7×10^{-7}
Th-231		1.0×10^3	2.7×10^{-8}	1.0×10^7	2.7×10^{-4}
Th-232		1.0×10^1	2.7×10^{-10}	1.0×10^4	2.7×10^{-7}
Th-234 (b)		1.0×10^3	2.7×10^{-8}	1.0×10^5	2.7×10^{-6}
Th (nat) (b)		1.0	2.7×10^{-11}	1.0×10^3	2.7×10^{-8}
Ti-44	Titanium (22)	1.0×10^1	2.7×10^{-10}	1.0×10^5	2.7×10^{-6}
Tl-200	Thallium (81)	1.0×10^1	2.7×10^{-10}	1.0×10^6	2.7×10^{-5}
Tl-201		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Tl-202		1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Tl-204		1.0×10^4	2.7×10^{-7}	1.0×10^4	2.7×10^{-7}
Tm-167	Thulium (69)	1.0×10^2	2.7×10^{-9}	1.0×10^6	2.7×10^{-5}
Tm-170		1.0×10^3	2.7×10^{-8}	1.0×10^6	2.7×10^{-5}
Tm-171		1.0×10^4	2.7×10^{-7}	1.0×10^8	2.7×10^{-3}
U-230 (fast lung absorption) (b), (d).	Uranium (92)	1.0×10^1	2.7×10^{-10}	1.0×10^5	2.7×10^{-6}
U-230 (medium lung absorption) (e).		1.0×10^1	2.7×10^{-10}	1.0×10^4	2.7×10^{-7}
U-230 (slow lung absorption) (f).		1.0×10^1	2.7×10^{-10}	1.0×10^4	2.7×10^{-7}
U-232 (fast lung absorption) (b), (d).		1.0	2.7×10^{-11}	1.0×10^3	2.7×10^{-8}
U-232 (medium lung absorption) (e).		1.0×10^1	2.7×10^{-10}	1.0×10^4	2.7×10^{-7}
U-232 (slow lung absorption) (f).		1.0×10^1	2.7×10^{-10}	1.0×10^4	2.7×10^{-7}
U-233 (fast lung		1.0×10^1	2.7×10^{-10}	1.0×10^4	2.7×10^{-7}

Symbol of radionuclide	Element and atomic number	Activity concentration for exempt material (Bq/g)	Activity concentration for exempt material (Ci/g)	Activity limit for exempt consignment (Bq)	Activity limit for exempt consignment (Ci)
absorption) (d).					
U-233 (medium lung absorption) (e).		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁵	2.7×10 ⁻⁶
U-233 (slow lung absorption) (f).		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁵	2.7×10 ⁻⁶
U-234 (fast lung absorption) (d).		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁴	2.7×10 ⁻⁷
U-234 (medium lung absorption) (e).		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁵	2.7×10 ⁻⁶
U-234 (slow lung absorption) (f).		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁵	2.7×10 ⁻⁶
U-235 (all lung absorption types) (b), (d), (e), (f).		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁴	2.7×10 ⁻⁷
U-236 (fast lung absorption) (d).		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁴	2.7×10 ⁻⁷
U-236 (medium lung absorption) (e).		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁵	2.7×10 ⁻⁶
U-236 (slow lung absorption) (f).		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁴	2.7×10 ⁻⁷
U-238 (all lung absorption types) (b), (d), (e), (f).		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁴	2.7×10 ⁻⁷
U (nat) (b)		1.0	2.7×10 ⁻¹¹	1.0×10 ³	2.7×10 ⁻⁸
U (enriched to 20% or less (g).		1.0	2.7×10 ⁻¹¹	1.0×10 ³	2.7×10 ⁻⁸
U (dep)		1.0	2.7×10 ⁻¹¹	1.0×10 ³	2.7×10 ⁻⁸
V-48	Vanadium (23)	1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁵	2.7×10 ⁻⁶
V-49		1.0×10 ⁴	2.7×10 ⁻⁷	1.0×10 ⁷	2.7×10 ⁻⁴
W-178	Tungsten (74)	1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁶	2.7×10 ⁻⁵
W-181		1.0×10 ³	2.7×10 ⁻⁸	1.0×10 ⁷	2.7×10 ⁻⁴
W-185		1.0×10 ⁴	2.7×10 ⁻⁷	1.0×10 ⁷	2.7×10 ⁻⁴
W-187		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁶	2.7×10 ⁻⁵
W-188		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁵	2.7×10 ⁻⁶
Xe-122	Xenon (54)	1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁹	2.7×10 ⁻²
Xe-123		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁹	2.7×10 ⁻²
Xe-127		1.0×10 ³	2.7×10 ⁻⁸	1.0×10 ⁵	2.7×10 ⁻⁶
Xe-131m		1.0×10 ⁴	2.7×10 ⁻⁷	1.0×10 ⁴	2.7×10 ⁻⁷
Xe-133		1.0×10 ³	2.7×10 ⁻⁸	1.0×10 ⁴	2.7×10 ⁻⁷
Xe-135		1.0×10 ³	2.7×10 ⁻⁸	1.0×10 ¹⁰	2.7×10 ⁻¹
Y-87	Yttrium (39)	1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁶	2.7×10 ⁻⁵
Y-88		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁶	2.7×10 ⁻⁵
Y-90		1.0×10 ³	2.7×10 ⁻⁸	1.0×10 ⁵	2.7×10 ⁻⁶
Y-91		1.0×10 ³	2.7×10 ⁻⁸	1.0×10 ⁶	2.7×10 ⁻⁵
Y-91m		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁶	2.7×10 ⁻⁵
Y-92		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁵	2.7×10 ⁻⁶
Y-93		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁵	2.7×10 ⁻⁶
Yb-169	Ytterbium (70)	1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁷	2.7×10 ⁻⁴
Yb-175		1.0×10 ³	2.7×10 ⁻⁸	1.0×10 ⁷	2.7×10 ⁻⁴
Zn-65	Zinc (30)	1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁶	2.7×10 ⁻⁵
Zn-69		1.0×10 ⁴	2.7×10 ⁻⁷	1.0×10 ⁶	2.7×10 ⁻⁵
Zn-69m		1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁶	2.7×10 ⁻⁵
Zr-88	Zirconium (40)	1.0×10 ²	2.7×10 ⁻⁹	1.0×10 ⁶	2.7×10 ⁻⁵
Zr-93 (b)		1.0×10 ³	2.7×10 ⁻⁸	1.0×10 ⁷	2.7×10 ⁻⁴
Zr-95		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁶	2.7×10 ⁻⁵
Zr-97 (b)		1.0×10 ¹	2.7×10 ⁻¹⁰	1.0×10 ⁵	2.7×10 ⁻⁶

^(a) [Reserved]

^(b) Parent Nuclides and their progeny in secular equilibrium are listed in the following:

Sr-90 Y-90

Zr-93 Nb93-m

Zr-97 Nb-97
 Ru-106 Rh-106
 Cs-137 Ba-137m
 Ce-134 La-134
 Ce-144 Pr-144
 Ba-140 La-140
 Bi-212 Tl-208 (0.36), Po-212 (0.64)
 Pb-210 Bi-210, Po-210
 Pb-212 Bi-212, Tl-208 (0.36), Po-212 (0.64)
 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
 Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208m(0.36), Po-212 (0.64)
 Ra-226, Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210
 Ra-228 Ac-228
 Th-226 Ra-222, Rn-218, Po-214
 Th-228 Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208 (0.36), Po-212(0.64)
 Th-229 Ra-225, Ac-225, Fr-221, At-217, Bi-213, Po-213, Pb-209
 Thnat Ra-228, Ac-228, Th-228, Ra-224, Rn-220, Po-216, Pb-212, Bi-212, Tl-208(0.36), Po-212(0.64)
 Th-234 Pa-234m
 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 (0.36), Po-212 (0.64)
 U-235 Th-231
 U-238 Th-234, Pa-234m
 U-nat Th-234, Pa-234m, U-234, Th-230, Ra-226, Rn-222, Po-218, Pb-214, Bi-214, Po-214, Pb-210, Bi-210, Po-210
 U-240 Np-240m
 Np-237 Pa-233
 Am-242m Am-242
 Am-243 Np-239
 (c)Reserved

^(d)These values apply only to compounds of uranium that take the chemical form of UF_6 , UO_2F_2 and $UO_2(NO_3)_2$ in both normal and accident conditions transport.

^(e)These values apply only to compounds of uranium that take the chemical form of UO_3 , UF_4 , UCl_4 and hexavalent compounds in both normal and accident conditions transport.

^(f)These values apply to all compounds of uranium other than those specified in notes (d) and (e) in the table.

^(g)These values apply to unirradiated uranium only.

Table 2. DOT TYPE A QUANTITIES [173.435 and Appendix G of IATA]

Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
Ac-225 (a)	Actinium (89)	8.0×10 ⁻¹	2.2×10 ₁	6.0×10 ⁻³	1.6×10 ⁻¹	2.1×10 ₃	5.8×10 ₄
Ac-227 (a)		9.0×10 ⁻¹	2.4×10 ₁	9.0×10 ⁻⁵	2.4×10 ⁻³	2.7	7.2×10 ₁
Ac-228		6.0×10 ⁻¹	1.6×10 ₁	5.0×10 ⁻¹	1.4×10 ₁	8.4×10 ₄	2.2×10 ₆
Ag-105	Silver (47)	2.0	5.4×10 ₁	2.0	5.4×10 ₁	1.1×10 ₃	3.0×10 ₄
Ag-108m (a)		7.0×10 ⁻¹	1.9×10 ₁	7.0×10 ⁻¹	1.9×10 ₁	9.7×10 ⁻¹	2.6×10 ₁
Ag-110m (a)		4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ⁻¹	1.1×10 ₁	1.8×10 ₂	4.7×10 ₃
Ag-111		2.0	5.4×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	5.8×10 ₃	1.6×10 ₅
Al-26	Aluminum (13)	1.0×10 ⁻¹	2.7	1.0×10 ⁻¹	2.7	7.0×10 ⁻⁴	1.9×10 ⁻²
Am-241	Americium (95)	1.0×10 ₁	2.7×10 ₂	1.0×10 ⁻³	2.7×10 ⁻²	1.3×10 ⁻¹	3.4
Am-242m (a)		1.0×10 ₁	2.7×10 ₂	1.0×10 ⁻³	2.7×10 ⁻²	3.6×10 ⁻¹	1.0×10 ₁
Am-243 (a)		5.0	1.4×10 ₂	1.0×10 ⁻³	2.7×10 ⁻²	7.4×10 ⁻³	2.0×10 ⁻¹
Ar-37	Argon (18)	4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	3.7×10 ₃	9.9×10 ₄
Ar-39		4.0×10 ₁	1.1×10 ₃	2.0×10 ₁	5.4×10 ₂	1.3	3.4×10 ₁
Ar-41		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	1.5×10 ₆	4.2×10 ₇
As-72	Arsenic (33)	3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	6.2×10 ₄	1.7×10 ₆
As-73		4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	8.2×10 ₂	2.2×10 ₄
As-74		1.0	2.7×10 ₁	9.0×10 ⁻¹	2.4×10 ₁	3.7×10 ₃	9.9×10 ₄
As-76		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	5.8×10 ₄	1.6×10 ₆
As-77		2.0×10 ₁	5.4×10 ₂	7.0×10 ⁻¹	1.9×10 ₁	3.9×10 ₄	1.0×10 ₆
At-211 (a)	Astatine (85)	2.0×10 ₁	5.4×10 ₂	5.0×10 ⁻¹	1.4×10 ₁	7.6×10 ₄	2.1×10 ₆
Au-193	Gold (79)	7.0	1.9×10 ₂	2.0	5.4×10 ₁	3.4×10 ₄	9.2×10 ₅
Au-194		1.0	2.7×10 ₁	1.0	2.7×10 ₁	1.5×10 ₄	4.1×10 ₅
Au-195		1.0×10 ₁	2.7×10 ₂	6.0	1.6×10 ₂	1.4×10 ₂	3.7×10 ₃
Au-198		1.0	2.7×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	9.0×10 ₃	2.4×10 ₅
Au-199		1.0×10 ₁	2.7×10 ₂	6.0×10 ⁻¹	1.6×10 ₁	7.7×10 ₃	2.1×10 ₅
Ba-131 (a)	Barium (56)	2.0	5.4×10 ₁	2.0	5.4×10 ₁	3.1×10 ₃	8.4×10 ₄
Ba-133		3.0	8.1×10 ₁	3.0	8.1×10 ₁	9.4	2.6×10 ₂
Ba-133m		2.0×10 ₁	5.4×10 ₂	6.0×10 ⁻¹	1.6×10 ₁	2.2×10 ₄	6.1×10 ₅
Ba-140 (a)		5.0×10 ⁻¹	1.4×10 ₁	3.0×10 ⁻¹	8.1	2.7×10 ₃	7.3×10 ₄
Be-7	Beryllium (4)	2.0×10 ₁	5.4×10 ₂	2.0×10 ₁	5.4×10 ₂	1.3×10 ₄	3.5×10 ₅
Be-10		4.0×10 ₁	1.1×10 ₃	6.0×10 ⁻¹	1.6×10 ₁	8.3×10 ⁻⁴	2.2×10 ⁻²
Bi-205	Bismuth (83)	7.0×10 ⁻¹	1.9×10 ₁	7.0×10 ⁻¹	1.9×10 ₁	1.5×10 ⁻³	4.2×10 ₄
Bi-206		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	3.8×10 ₃	1.0×10 ₅
Bi-207		7.0×10 ⁻¹	1.9×10 ₁	7.0×10 ⁻¹	1.9×10 ₁	1.9	5.2×10 ₁
Bi-210		1.0	2.7×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	4.6×10 ₃	1.2×10 ₅
Bi-210m (a)		6.0×10 ⁻¹	1.6×10 ₁	2.0×10 ⁻²	5.4×10 ⁻¹	2.1×10 ⁻⁵	5.7×10 ⁻⁴
Bi-212 (a)		7.0×10 ⁻¹	1.9×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	5.4×10 ₅	1.5×10 ₇
Bk-247	Berkelium (97)	8.0	2.2×10 ₂	8.0×10 ⁻⁴	2.2×10 ⁻²	3.8×10 ⁻²	1.0
Bk-249 (a)		4.0×10 ₁	1.1×10 ₃	3.0×10 ⁻¹	8.1	6.1×10 ₁	1.6×10 ₃
Br-76	Bromine (35)	4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ⁻¹	1.1×10 ₁	9.4×10 ₄	2.5×10 ₆
Br-77		3.0	8.1×10 ₁	3.0	8.1×10 ₁	2.6×10 ₄	7.1×10 ₅
Br-82		4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ₄	1.1×10 ₆
C-11	Carbon (6)	1.0	2.7×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	3.1×10 ₇	8.4×10 ₈
C-14		4.0×10 ₁	1.1×10 ₃	3.0	8.1×10 ₁	1.6×10 ⁻¹	4.5

Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
Ca-41	Calcium (20)	Unlimited	Unlimited	Unlimited	Unlimited	3.1×10 ⁻³	8.5×10 ⁻²
Ca-45		4.0×10 ¹	1.1×10 ³	1.0	2.7×10 ¹	6.6×10 ²	1.8×10 ⁴
Ca-47 (a)		3.0	8.1×10 ¹	3.0×10 ⁻¹	8.1	2.3×10 ⁴	6.1×10 ⁵
Cd-109	Cadmium (48)	3.0×10 ¹	8.1×10 ²	2.0	5.4×10 ¹	9.6×10 ¹	2.6×10 ³
Cd-113m		4.0×10 ¹	1.1×10 ³	5.0×10 ⁻¹	1.4×10 ¹	8.3	2.2×10 ²
Cd-115 (a)		3.0	8.1×10 ¹	4.0×10 ⁻¹	1.1×10 ¹	1.9×10 ⁴	5.1×10 ⁵
Cd-115m		5.0×10 ⁻¹	1.4×10 ¹	5.0×10 ⁻¹	1.4×10 ¹	9.4×10 ²	2.5×10 ⁴
Ce-139	Cerium (58)	7.0	1.9×10 ²	2.0	5.4×10 ¹	2.5×10 ²	6.8×10 ³
Ce-141		2.0×10 ¹	5.4×10 ²	6.0×10 ⁻¹	1.6×10 ¹	1.1×10 ³	2.8×10 ⁴
Ce-143		9.0×10 ⁻¹	2.4×10 ¹	6.0×10 ⁻¹	1.6×10 ¹	2.5×10 ⁴	6.6×10 ⁵
Ce-144 (a)		2.0×10 ⁻¹	5.4	2.0×10 ⁻¹	5.4	1.2×10 ²	3.2×10 ³
Cf-248	Californium (98)	4.0×10 ¹	1.1×10 ³	6.0×10 ⁻³	1.6×10 ⁻¹	5.8×10 ¹	1.6×10 ³
Cf-249		3.0	8.1×10 ¹	8.0×10 ⁻⁴	2.2×10 ⁻²	1.5×10 ⁻¹	4.1
Cf-250		2.0×10 ¹	5.4×10 ²	2.0×10 ⁻³	5.4×10 ⁻²	4.0	1.1×10 ²
Cf-251		7.0	1.9×10 ²	7.0×10 ⁻⁴	1.9×10 ⁻²	5.9×10 ⁻²	1.6
Cf-252 (h)		5.0×10 ⁻²	1.4	3.0×10 ⁻³	8.1×10 ⁻²	2.0×10 ¹	5.4×10 ²
Cf-253 (a)		4.0×10 ¹	1.1×10 ³	4.0×10 ⁻²	1.1	1.1×10 ³	2.9×10 ⁴
Cf-254	.	1.0×10 ⁻³	2.7×10 ⁻²	1.0×10 ⁻³	2.7×10 ⁻²	3.1×10 ²	8.5×10 ³
Cl-36	Chlorine (17)	1.0×10 ¹	2.7×10 ²	6.0×10 ⁻¹	1.6×10 ¹	1.2×10 ⁻³	3.3×10 ⁻²
Cl-38		2.0×10 ⁻¹	5.4	2.0×10 ⁻¹	5.4	4.9×10 ⁶	1.3×10 ⁸
Cm-240	Curium (96)	4.0×10 ¹	1.1×10 ³	2.0×10 ⁻²	5.4×10 ⁻¹	7.5×10 ²	2.0×10 ⁴
Cm-241		2.0	5.4×10 ¹	1.0	2.7×10 ¹	6.1×10 ²	1.7×10 ⁴
Cm-242		4.0×10 ¹	1.1×10 ³	1.0×10 ⁻²	2.7×10 ⁻¹	1.2×10 ²	3.3×10 ³
Cm-243		9.0	2.4×10 ²	1.0×10 ⁻³	2.7×10 ⁻²	1.9×10 ⁻³	5.2×10 ¹
Cm-244		2.0×10 ¹	5.4×10 ²	2.0×10 ⁻³	5.4×10 ⁻²	3.0	8.1×10 ¹
Cm-245		9.0	2.4×10 ²	9.0×10 ⁻⁴	2.4×10 ⁻²	6.4×10 ⁻³	1.7×10 ⁻¹
Cm-246		9.0	2.4×10 ²	9.0×10 ⁻⁴	2.4×10 ⁻²	1.1×10 ⁻²	3.1×10 ⁻¹
Cm-247 (a)		3.0	8.1×10 ¹	1.0×10 ⁻³	2.7×10 ⁻²	3.4×10 ⁻⁶	9.3×10 ⁻⁵
Cm-248		2.0×10 ⁻²	5.4×10 ⁻¹	3.0×10 ⁻⁴	8.1×10 ⁻³	1.6×10 ⁻⁵	4.2×10 ⁻³
Co-55	Cobalt (27)	5.0×10 ⁻¹	1.4×10 ¹	5.0×10 ⁻¹	1.4×10 ¹	1.1×10 ⁵	3.1×10 ⁶
Co-56		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	1.1×10 ³	3.0×10 ⁴
Co-57		1.0×10 ¹	2.7×10 ²	1.0×10 ¹	2.7×10 ²	3.1×10 ²	8.4×10 ³
Co-58		1.0	2.7×10 ¹	1.0	2.7×10 ¹	1.2×10 ³	3.2×10 ⁴
Co-58m		4.0×10 ¹	1.1×10 ³	4.0×10 ¹	1.1×10 ³	2.2×10 ⁵	5.9×10 ⁶
Co-60		4.0×10 ⁻¹	1.1×10 ¹	4.0×10 ⁻¹	1.1×10 ¹	4.2×10 ¹	1.1×10 ³
Cr-51	Chromium (24)	3.0×10 ¹	8.1×10 ²	3.0×10 ¹	8.1×10 ²	3.4×10 ³	9.2×10 ⁴
Cs-129	Cesium (55)	4.0	1.1×10 ²	4.0	1.1×10 ²	2.8×10 ⁴	7.6×10 ⁵
Cs-131		3.0×10 ¹	8.1×10 ²	3.0×10 ¹	8.1×10 ²	3.8×10 ³	1.0×10 ⁵
Cs-132		1.0	2.7×10 ¹	1.0	2.7×10 ¹	5.7×10 ³	1.5×10 ⁵
Cs-134		7.0×10 ⁻¹	1.9×10 ¹	7.0×10 ⁻¹	1.9×10 ¹	4.8×10 ¹	1.3×10 ³
Cs-134m		4.0×10 ¹	1.1×10 ³	6.0×10 ⁻¹	1.6×10 ¹	3.0×10 ⁵	8.0×10 ⁶
Cs-135		4.0×10 ¹	1.1×10 ³	1.0	2.7×10 ¹	4.3×10 ⁻⁵	1.2×10 ⁻³
Cs-136		5.0×10 ⁻¹	1.4×10 ¹	5.0×10 ⁻¹	1.4×10 ¹	2.7×10 ³	7.3×10 ⁴
Cs-137 (a)		2.0	5.4×10 ¹	6.0×10 ⁻¹	1.6×10 ¹	3.2	8.7×10 ¹
Cu-64	Copper (29)	6.0	1.6×10 ²	1.0	2.7×10 ¹	1.4×10 ⁵	3.9×10 ⁶
Cu-67		1.0×10 ¹	2.7×10 ²	7.0×10 ⁻¹	1.9×10 ¹	2.8×10 ⁴	7.6×10 ⁵

Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
Dy-159	Dysprosium (66)	2.0×10 ₁	5.4×10 ₂	2.0×10 ₁	5.4×10 ₂	2.1×10 ₂	5.7×10 ₃
Dy-165		9.0×10 ₋₁	2.4×10 ₁	6.0×10 ₋₁	1.6×10 ₁	3.0×10 ₅	8.2×10 ₆
Dy-166 (a)		9.0×10 ₋₁	2.4×10 ₁	3.0×10 ₋₁	8.1	8.6×10 ₃	2.3×10 ₅
Er-169	Erbium (68)	4.0×10 ₁	1.1×10 ₃	1.0	2.7×10 ₁	3.1×10 ₃	8.3×10 ₄
Er-171		8.0×10 ₋₁	2.2×10 ₁	5.0×10 ₋₁	1.4×10 ₁	9.0×10 ₄	2.4×10 ₆
Eu-147	Europium (63)	2.0	5.4×10 ₁	2.0	5.4×10 ₁	1.4×10 ₃	3.7×10 ₄
Eu-148		5.0×10 ₋₁	1.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	6.0×10 ₂	1.6×10 ₄
Eu-149		2.0×10 ₁	5.4×10 ₂	2.0×10 ₁	5.4×10 ₂	3.5×10 ₂	9.4×10 ₃
Eu-150 (short lived).		2.0	5.4×10 ₁	7.0×10 ₋₁	1.9×10 ₁	6.1×10 ₄	1.6×10 ₆
Eu-150 (long lived).		7 x 10 ⁻¹	1.9×10 ₁	7.0×10 ₋₁	1.9×10 ₁	6.1×10 ₄	1.6×10 ₆
Eu-152		1.0	2.7×10 ₁	1.0	2.7×10 ₁	6.5	1.8×10 ₂
Eu-152m		8.0×10 ₋₁	2.2×10 ₁	8.0×10 ₋₁	2.2×10 ₁	8.2×10 ₄	2.2×10 ₆
Eu-154		9.0×10 ₋₁	2.4×10 ₁	6.0×10 ₋₁	1.6×10 ₁	9.8	2.6×10 ₂
Eu-155		2.0×10 ₁	5.4×10 ₂	3.0	8.1×10 ₁	1.8×10 ₁	4.9×10 ₂
Eu-156		7.0×10 ₋₁	1.9×10 ₁	7.0×10 ₋₁	1.9×10 ₁	2.0×10 ₃	5.5×10 ₄
F-18	Fluorine (9)	1.0	2.7×10 ₁	6.0×10 ₋₁	1.6×10 ₁	3.5×10 ₆	9.5×10 ₇
Fe-52 (a)	Iron (26)	3.0×10 ₋₁	8.1	3.0×10 ₋₁	8.1	2.7×10 ₅	7.3×10 ₆
Fe-55		4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	8.8×10 ₁	2.4×10 ₃
Fe-59		9.0×10 ₋₁	2.4×10 ₁	9.0×10 ₋₁	2.4×10 ₁	1.8×10 ₃	5.0×10 ₄
Fe-60 (a)		4.0×10 ₁	1.1×10 ₃	2.0×10 ₋₁	5.4	7.4×10 ₋₄	2.0×10 ₋₂
Ga-67	Gallium (31)	7.0	1.9×10 ₂	3.0	8.1×10 ₁	2.2×10 ₄	6.0×10 ₅
Ga-68		5.0×10 ₋₁	1.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	1.5×10 ₆	4.1×10 ₇
Ga-72		4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	1.1×10 ₅	3.1×10 ₆
Gd-146 (a)	Gadolinium (64)	5.0×10 ₋₁	1.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	6.9×10 ₂	1.9×10 ₄
Gd-148		2.0×10 ₁	5.4×10 ₂	2.0×10 ₋₃	5.4×10 ₋₂	1.2	3.2×10 ₁
Gd-153		1.0×10 ₁	2.7×10 ₂	9.0	2.4×10 ₂	1.3×10 ₂	3.5×10 ₃
Gd-159		3.0	8.1×10 ₁	6.0×10 ₋₁	1.6×10 ₁	3.9×10 ₄	1.1×10 ₆
Ge-68 (a)	Germanium (32)	5.0×10 ₋₁	1.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	2.6×10 ₂	7.1×10 ₃
Ge-71		4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	5.8×10 ₃	1.6×10 ₅
Ge-77		3.0×10 ₋₁	8.1	3.0×10 ₋₁	8.1	1.3×10 ₅	3.6×10 ₆
Hf-172 (a)	Hafnium (72)	6.0×10 ₋₁	1.6×10 ₁	6.0×10 ₋₁	1.6×10 ₁	4.1×10 ₁	1.1×10 ₃
Hf-175		3.0	8.1×10 ₁	3.0	8.1×10 ₁	3.9×10 ₂	1.1×10 ₄
Hf-181		2.0	5.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	6.3×10 ₂	1.7×10 ₄
Hf-182		Unlimited	Unlimited	Unlimited	Unlimited	8.1×10 ₋₆	2.2×10 ₋₄
Hg-194 (a)	Mercury (80)	1.0	2.7×10 ₁	1.0	2.7×10 ₁	1.3×10 ₋₁	3.5
Hg-195m (a)		3.0	8.1×10 ₁	7.0×10 ₋₁	1.9×10 ₁	1.5×10 ₄	4.0×10 ₅
Hg-197		2.0×10 ₁	5.4×10 ₂	1.0×10 ₁	2.7×10 ₂	9.2×10 ₃	2.5×10 ₅
Hg-197m		1.0×10 ₁	2.7×10 ₂	4.0×10 ₋₁	1.1×10 ₁	2.5×10 ₄	6.7×10 ₅
Hg-203		5.0	1.4×10 ₂	1.0	2.7×10 ₁	5.1×10 ₂	1.4×10 ₄
Ho-166	Holmium (67)	4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	2.6×10 ₄	7.0×10 ₅
Ho-166m		6.0×10 ₋₁	1.6×10 ₁	5.0×10 ₋₁	1.4×10 ₁	6.6×10 ₋₂	1.8
I-123	Iodine (53)	6.0	1.6×10 ₂	3.0	8.1×10 ₁	7.1×10 ₄	1.9×10 ₆
I-124		1.0	2.7×10 ₁	1.0	2.7×10 ₁	9.3×10 ₃	2.5×10 ₅
I-125		2.0×10 ₁	5.4×10 ₂	3.0	8.1×10 ₁	6.4×10 ₂	1.7×10 ₄
I-126		2.0	5.4×10 ₁	1.0	2.7×10 ₁	2.9×10 ₃	8.0×10 ₄

Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
I-129		Unlimited	Unlimited	Unlimited	Unlimited	6.5×10 ⁻⁶	1.8×10 ⁻⁴
I-131		3.0	8.1×10 ₁	7.0×10 ⁻¹	1.9×10 ₁	4.6×10 ₃	1.2×10 ₅
I-132		4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ⁻¹	1.1×10 ₁	3.8×10 ₅	1.0×10 ₇
I-133		7.0×10 ⁻¹	1.9×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	4.2×10 ₄	1.1×10 ₆
I-134		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	9.9×10 ₅	2.7×10 ₇
I-135 (a)		6.0×10 ⁻¹	1.6×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	1.3×10 ₅	3.5×10 ₆
In-111	Indium (49)	3.0	8.1×10 ₁	3.0	8.1×10 ₁	1.5×10 ₄	4.2×10 ₅
In-113m		4.0	1.1×10 ₂	2.0	5.4×10 ₁	6.2×10 ₅	1.7×10 ₇
In-114m (a)		1.0×10 ₁	2.7×10 ₂	5.0×10 ⁻¹	1.4×10 ₁	8.6×10 ₂	2.3×10 ₄
In-115m		7.0	1.9×10 ₂	1.0	2.7×10 ₁	2.2×10 ₅	6.1×10 ₆
Ir-189 (a)	Iridium (77)	1.0×10 ₁	2.7×10 ₂	1.0×10 ₁	2.7×10 ₂	1.9×10 ₃	5.2×10 ₄
Ir-190		7.0×10 ⁻¹	1.9×10 ₁	7.0×10 ⁻¹	1.9×10 ₁	2.3×10 ₃	6.2×10 ₄
Ir-192 (c)		1.0	2.7×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	3.4×10 ₂	9.2×10 ₃
Ir-194		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	3.1×10 ₄	8.4×10 ₅
K-40	Potassium (19)	9.0×10 ⁻¹	2.4×10 ₁	9.0×10 ⁻¹	2.4×10 ₁	2.4×10 ⁻⁷	6.4×10 ⁻⁶
K-42		2.0×10 ⁻¹	5.4	2.0×10 ⁻¹	5.4	2.2×10 ₅	6.0×10 ₆
K-43		7.0×10 ⁻¹	1.9×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	1.2×10 ₅	3.3×10 ₆
Kr-81	Krypton (36)	4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	7.8×10 ⁻⁴	2.1×10 ⁻²
Kr-85		1.0×10 ₁	2.7×10 ₂	1.0×10 ₁	2.7×10 ₂	1.5×10 ₁	3.9×10 ₂
Kr-85m		8.0	2.2×10 ₂	3.0	8.1×10 ₁	3.0×10 ₅	8.2×10 ₆
Kr-87		2.0×10 ⁻¹	5.4	2.0×10 ⁻¹	5.4	1.0×10 ₆	2.8×10 ₇
La-137	Lanthanum (57)	3.0×10 ₁	8.1×10 ₂	6.0	1.6×10 ₂	1.6×10 ⁻³	4.4×10 ⁻²
La-140		4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ⁻¹	1.1×10 ₁	2.1×10 ₄	5.6×10 ₅
Lu-172	Lutetium (71)	6.0×10 ⁻¹	1.6×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	4.2×10 ₃	1.1×10 ₅
Lu-173		8.0	2.2×10 ₂	8.0	2.2×10 ₂	5.6×10 ₁	1.5×10 ₃
Lu-174		9.0	2.4×10 ₂	9.0	2.4×10 ₂	2.3×10 ₁	6.2×10 ₂
Lu-174m		2.0×10 ₁	5.4×10 ₂	1.0×10 ₁	2.7×10 ₂	2.0×10 ₂	5.3×10 ₃
Lu-177		3.0×10 ₁	8.1×10 ₂	7.0×10 ⁻¹	1.9×10 ₁	4.1×10 ₃	1.1×10 ₅
Mg-28 (a)	Magnesium (12)	3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	2.0×10 ₅	5.4×10 ₆
Mn-52	Manganese (25)	3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	1.6×10 ₄	4.4×10 ₅
Mn-53		Unlimited	Unlimited	Unlimited	Unlimited	6.8×10 ⁻⁵	1.8×10 ⁻³
Mn-54		1.0	2.7×10 ₁	1.0	2.7×10 ₁	2.9×10 ₂	7.7×10 ₃
Mn-56		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	8.0×10 ₅	2.2×10 ₇
Mo-93	Molybdenum (42)	4.0×10 ₁	1.1×10 ₃	2.0×10 ₁	5.4×10 ₂	4.1×10 ⁻²	1.1
Mo-99 (a) (i)		1.0	2.7×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	1.8×10 ₄	4.8×10 ₅
N-13	Nitrogen (7)	9.0×10 ⁻¹	2.4×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	5.4×10 ₇	1.5×10 ₉
Na-22	Sodium (11)	5.0×10 ⁻¹	1.4×10 ₁	5.0×10 ⁻¹	1.4×10 ₁	2.3×10 ₂	6.3×10 ₃
Na-24		2.0×10 ⁻¹	5.4	2.0×10 ⁻¹	5.4	3.2×10 ₅	8.7×10 ₆
Nb-93m	Niobium (41)	4.0×10 ₁	1.1×10 ₃	3.0×10 ₁	8.1×10 ₂	8.8	2.4×10 ₂
Nb-94		7.0×10 ⁻¹	1.9×10 ₁	7.0×10 ⁻¹	1.9×10 ₁	6.9×10 ⁻³	1.9×10 ⁻¹
Nb-95		1.0	2.7×10 ₁	1.0	2.7×10 ₁	1.5×10 ₃	3.9×10 ₄
Nb-97		9.0×10 ⁻¹	2.4×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	9.9×10 ₅	2.7×10 ₇
Nd-147	Neodymium (60)	6.0	1.6×10 ₂	6.0×10 ⁻¹	1.6×10 ₁	3.0×10 ₃	8.1×10 ₄
Nd-149		6.0×10 ⁻¹	1.6×10 ₁	5.0×10 ⁻¹	1.4×10 ₁	4.5×10 ₅	1.2×10 ₇
Ni-59	Nickel (28)	Unlimited	Unlimited	Unlimited	Unlimited	3.0×10 ⁻³	8.0×10 ⁻²
Ni-63		4.0×10 ₁	1.1×10 ₃	3.0×10 ₁	8.1×10 ₂	2.1	5.7×10 ₁

Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
Ni-65		4.0×10 ⁻¹	1.1×10 ¹	4.0×10 ⁻¹	1.1×10 ¹	7.1×10 ⁵	1.9×10 ⁷
Np-235	Neptunium (93)	4.0×10 ¹	1.1×10 ³	4.0×10 ¹	1.1×10 ³	5.2×10 ¹	1.4×10 ³
Np-236 (short-lived).		2.0×10 ¹	5.4×10 ²	2.0	5.4×10 ¹	4.7×10 ⁻⁴	1.3×10 ⁻²
Np-236 (long-lived).		9.0×10 ⁰	2.4×10 ²	2.0×10 ⁻²	5.4×10 ⁻¹	4.7×10 ⁻⁴	1.3×10 ⁻²
Np-237		2.0×10 ¹	5.4×10 ²	2.0×10 ⁻³	5.4×10 ⁻²	2.6×10 ⁻⁵	7.1×10 ⁻⁴
Np-239		7.0	1.9×10 ²	4.0×10 ⁻¹	1.1×10 ¹	8.6×10 ³	2.3×10 ⁵
Os-185	Osmium (76)	1.0	2.7×10 ¹	1.0	2.7×10 ¹	2.8×10 ²	7.5×10 ³
Os-191		1.0×10 ¹	2.7×10 ²	2.0	5.4×10 ¹	1.6×10 ³	4.4×10 ⁴
Os-191m		4.0×10 ¹	1.1×10 ³	3.0×10 ¹	8.1×10 ²	4.6×10 ⁴	1.3×10 ⁶
Os-193		2.0	5.4×10 ¹	6.0×10 ⁻¹	1.6×10 ¹	2.0×10 ⁴	5.3×10 ⁵
Os-194 (a)		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	1.1×10 ¹	3.1×10 ²
P-32	Phosphorus (15)	5.0×10 ⁻¹	1.4×10 ¹	5.0×10 ⁻¹	1.4×10 ¹	1.1×10 ⁴	2.9×10 ⁵
P-33		4.0×10 ¹	1.1×10 ³	1.0	2.7×10 ¹	5.8×10 ³	1.6×10 ⁵
Pa-230 (a)	Protactinium (91)	2.0	5.4×10 ¹	7.0×10 ⁻²	1.9	1.2×10 ³	3.3×10 ⁴
Pa-231		4.0	1.1×10 ²	4.0×10 ⁻⁴	1.1×10 ⁻²	1.7×10 ⁻³	4.7×10 ⁻²
Pa-233		5.0	1.4×10 ²	7.0×10 ⁻¹	1.9×10 ¹	7.7×10 ²	2.1×10 ⁴
Pb-201	Lead (82)	1.0	2.7×10 ¹	1.0	2.7×10 ¹	6.2×10 ⁴	1.7×10 ⁶
Pb-202		4.0×10 ¹	1.1×10 ³	2.0×10 ¹	5.4×10 ²	1.2×10 ⁻⁴	3.4×10 ⁻³
Pb-203		4.0	1.1×10 ²	3.0	8.1×10 ¹	1.1×10 ⁴	3.0×10 ⁵
Pb-205		Unlimited	Unlimited	Unlimited	Unlimited	4.5×10 ⁻⁶	1.2×10 ⁻⁴
Pb-210 (a)		1.0	2.7×10 ¹	5.0×10 ⁻²	1.4	2.8	7.6×10 ¹
Pb-212 (a)		7.0×10 ⁻¹	1.9×10 ¹	2.0×10 ⁻¹	5.4	5.1×10 ⁴	1.4×10 ⁶
Pd-103 (a)	Palladium (46)	4.0×10 ¹	1.1×10 ³	4.0×10 ¹	1.1×10 ³	2.8×10 ³	7.5×10 ⁴
Pd-107		Unlimited	Unlimited	Unlimited	Unlimited	1.9×10 ⁻⁵	5.1×10 ⁻⁴
Pd-109		2.0	5.4×10 ¹	5.0×10 ⁻¹	1.4×10 ¹	7.9×10 ⁴	2.1×10 ⁶
Pm-143	Promethium (61)	3.0	8.1×10 ¹	3.0	8.1×10 ¹	1.3×10 ²	3.4×10 ³
Pm-144		7.0×10 ⁻¹	1.9×10 ¹	7.0×10 ⁻¹	1.9×10 ¹	9.2×10 ¹	2.5×10 ³
Pm-145		3.0×10 ¹	8.1×10 ²	1.0×10 ¹	2.7×10 ²	5.2	1.4×10 ²
Pm-147		4.0×10 ¹	1.1×10 ³	2.0	5.4×10 ¹	3.4×10 ¹	9.3×10 ²
Pm-148m (a)		8.0×10 ⁻¹	2.2×10 ¹	7.0×10 ⁻¹	1.9×10 ¹	7.9×10 ²	2.1×10 ⁴
Pm-149		2.0	5.4×10 ¹	6.0×10 ⁻¹	1.6×10 ¹	1.5×10 ⁴	4.0×10 ⁵
Pm-151		2.0	5.4×10 ¹	6.0×10 ⁻¹	1.6×10 ¹	2.7×10 ⁴	7.3×10 ⁵
Po-210	Polonium (84)	4.0×10 ¹	1.1×10 ³	2.0×10 ⁻²	5.4×10 ⁻¹	1.7×10 ²	4.5×10 ³
Pr-142	Praseodymium (59)	4.0×10 ⁻¹	1.1×10 ¹	4.0×10 ⁻¹	1.1×10 ¹	4.3×10 ⁴	1.2×10 ⁶
Pr-143		3.0	8.1×10 ¹	6.0×10 ⁻¹	1.6×10 ¹	2.5×10 ³	6.7×10 ⁴
Pt-188 (a)	Platinum (78)	1.0	2.7×10 ¹	8.0×10 ⁻¹	2.2×10 ¹	2.5×10 ³	6.8×10 ⁴
Pt-191		4.0	1.1×10 ²	3.0	8.1×10 ¹	8.7×10 ³	2.4×10 ⁵
Pt-193		4.0×10 ¹	1.1×10 ³	4.0×10 ¹	1.1×10 ³	1.4	3.7×10 ¹
Pt-193m		4.0×10 ¹	1.1×10 ³	5.0×10 ⁻¹	1.4×10 ¹	5.8×10 ³	1.6×10 ⁵
Pt-195m		1.0×10 ¹	2.7×10 ²	5.0×10 ⁻¹	1.4×10 ¹	6.2×10 ³	1.7×10 ⁵
Pt-197		2.0×10 ¹	5.4×10 ²	6.0×10 ⁻¹	1.6×10 ¹	3.2×10 ⁴	8.7×10 ⁵
Pt-197m		1.0×10 ¹	2.7×10 ²	6.0×10 ⁻¹	1.6×10 ¹	3.7×10 ⁵	1.0×10 ⁷
Pu-236	Plutonium (94)	3.0×10 ¹	8.1×10 ²	3.0×10 ⁻³	8.1×10 ⁻²	2.0×10 ¹	5.3×10 ²
Pu-237		2.0×10 ¹	5.4×10 ²	2.0×10 ¹	5.4×10 ²	4.5×10 ²	1.2×10 ⁴
Pu-238		1.0×10 ¹	2.7×10 ²	1.0×10 ⁻³	2.7×10 ⁻²	6.3×10 ⁻¹	1.7×10 ¹

Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
Pu-239		1.0×10 ₁	2.7×10 ₂	1.0×10 ₋₃	2.7×10 ₋₂	2.3×10 ₋₃	6.2×10 ₋₂
Pu-240		1.0×10 ₁	2.7×10 ₂	1.0×10 ₋₃	2.7×10 ₋₂	8.4×10 ₋₃	2.3×10 ₋₁
Pu-241 (a)		4.0×10 ₁	1.1×10 ₃	6.0×10 ₋₂	1.6	3.8	1.0×10 ₂
Pu-242		1.0×10 ₁	2.7×10 ₂	1.0×10 ₋₃	2.7×10 ₋₂	1.5×10 ₋₄	3.9×10 ₋₃
Pu-244 (a)		4.0×10 ₋₁	1.1×10 ₁	1.0×10 ₋₃	2.7×10 ₋₂	6.7×10 ₋₇	1.8×10 ₋₅
Ra-223 (a)	Radium (88)	4.0×10 ₋₁	1.1×10 ₁	7.0×10 ₋₃	1.9×10 ₋₁	1.9×10 ₃	5.1×10 ₄
Ra-224 (a)		4.0×10 ₋₁	1.1×10 ₁	2.0×10 ₋₂	5.4×10 ₋₁	5.9×10 ₃	1.6×10 ₅
Ra-225 (a)		2.0×10 ₋₁	5.4	4.0×10 ₋₃	1.1×10 ₋₁	1.5×10 ₃	3.9×10 ₄
Ra-226 (a)		2.0×10 ₋₁	5.4	3.0×10 ₋₃	8.1×10 ₋₂	3.7×10 ₋₂	1.0
Ra-228 (a)		6.0×10 ₋₁	1.6×10 ₁	2.0×10 ₋₂	5.4×10 ₋₁	1.0×10 ₁	2.7×10 ₂
Rb-81	Rubidium (37)	2.0	5.4×10 ₁	8.0×10 ₋₁	2.2×10 ₁	3.1×10 ₅	8.4×10 ₆
Rb-83 (a)		2.0	5.4×10 ₁	2.0	5.4×10 ₁	6.8×10 ₂	1.8×10 ₄
Rb-84		1.0	2.7×10 ₁	1.0	2.7×10 ₁	1.8×10 ₃	4.7×10 ₄
Rb-86		5.0×10 ₋₁	1.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	3.0×10 ₃	8.1×10 ₄
Rb-87		Unlimited	Unlimited	Unlimited	Unlimited	3.2×10 ₋₉	8.6×10 ₋₈
Rb(nat)		Unlimited	Unlimited	Unlimited	Unlimited	6.7×10 ₆	1.8×10 ₈
Re-184	Rhenium (75)	1.0	2.7×10 ₁	1.0	2.7×10 ₁	6.9×10 ₂	1.9×10 ₄
Re-184m		3.0	8.1×10 ₁	1.0	2.7×10 ₁	1.6×10 ₂	4.3×10 ₃
Re-186		2.0	5.4×10 ₁	6.0×10 ₋₁	1.6×10 ₁	6.9×10 ₃	1.9×10 ₅
Re-187		Unlimited	Unlimited	Unlimited	Unlimited	1.4×10 ₋₉	3.8×10 ₋₈
Re-188		4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	3.6×10 ₄	9.8×10 ₅
Re-189 (a)		3.0	8.1×10 ₁	6.0×10 ₋₁	1.6×10 ₁	2.5×10 ₄	6.8×10 ₅
Re(nat)		Unlimited	Unlimited	Unlimited	Unlimited	0.0	2.4×10 ₋₈
Rh-99	Rhodium (45)	2.0	5.4×10 ₁	2.0	5.4×10 ₁	3.0×10 ₃	8.2×10 ₄
Rh-101		4.0	1.1×10 ₂	3.0	8.1×10 ₁	4.1×10 ₁	1.1×10 ₃
Rh-102		5.0×10 ₋₁	1.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	4.5×10 ₁	1.2×10 ₃
Rh-102m		2.0	5.4×10 ₁	2.0	5.4×10 ₁	2.3×10 ₂	6.2×10 ₃
Rh-103m		4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	1.2×10 ₆	3.3×10 ₇
Rh-105		1.0×10 ₁	2.7×10 ₂	8.0×10 ₋₁	2.2×10 ₁	3.1×10 ₄	8.4×10 ₅
Rn-222 (a)	Radon (86)	3.0×10 ₋₁	8.1	4.0×10 ₋₃	1.1×10 ₋₁	5.7×10 ₃	1.5×10 ₅
Ru-97	Ruthenium (44)	5.0	1.4×10 ₂	5.0	1.4×10 ₂	1.7×10 ₄	4.6×10 ₅
Ru-103 (a)		2.0	5.4×10 ₁	2.0	5.4×10 ₁	1.2×10 ₃	3.2×10 ₄
Ru-105		1.0	2.7×10 ₁	6.0×10 ₋₁	1.6×10 ₁	2.5×10 ₅	6.7×10 ₆
Ru-106 (a)		2.0×10 ₋₁	5.4	2.0×10 ₋₁	5.4	1.2×10 ₂	3.3×10 ₃
S-35	Sulphur (16)	4.0×10 ₁	1.1×10 ₃	3.0	8.1×10 ₁	1.6×10 ₃	4.3×10 ₄
Sb-122	Antimony (51)	4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	1.5×10 ₄	4.0×10 ₅
Sb-124		6.0×10 ₋₁	1.6×10 ₁	6.0×10 ₋₁	1.6×10 ₁	6.5×10 ₂	1.7×10 ₄
Sb-125		2.0	5.4×10 ₁	1.0	2.7×10 ₁	3.9×10 ₁	1.0×10 ₃
Sb-126		4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	3.1×10 ₃	8.4×10 ₄
Sc-44	Scandium (21)	5.0×10 ₋₁	1.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	6.7×10 ₅	1.8×10 ₇
Sc-46		5.0×10 ₋₁	1.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	1.3×10 ₃	3.4×10 ₄
Sc-47		1.0×10 ₁	2.7×10 ₂	7.0×10 ₋₁	1.9×10 ₁	3.1×10 ₄	8.3×10 ₅
Sc-48		3.0×10 ₋₁	8.1	3.0×10 ₋₁	8.1	5.5×10 ₄	1.5×10 ₆
Se-75	Selenium (34)	3.0	8.1×10 ₁	3.0	8.1×10 ₁	5.4×10 ₂	1.5×10 ₄
Se-79		4.0×10 ₁	1.1×10 ₃	2.0	5.4×10 ₁	2.6×10 ₋₃	7.0×10 ₋₂
Si-31	Silicon (14)	6.0×10 ₋₁	1.6×10 ₁	6.0×10 ₋₁	1.6×10 ₁	1.4×10 ₆	3.9×10 ₇

Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
Si-32		4.0×10 ₁	1.1×10 ₃	5.0×10 ₋₁	1.4×10 ₁	3.9	1.1×10 ₂
Sm-145	Samarium (62)	1.0×10 ₁	2.7×10 ₂	1.0×10 ₁	2.7×10 ₂	9.8×10 ₁	2.6×10 ₃
Sm-147		Unlimited	Unlimited	Unlimited	Unlimited	8.5×10 ₋₁	2.3×10 ₋₈
Sm-151		4.0×10 ₁	1.1×10 ₃	1.0×10 ₁	2.7×10 ₂	9.7×10 ₋₁	2.6×10 ₁
Sm-153		9.0	2.4×10 ₂	6.0×10 ₋₁	1.6×10 ₁	1.6×10 ₄	4.4×10 ₅
Sn-113 (a)	Tin (50)	4.0	1.1×10 ₂	2.0	5.4×10 ₁	3.7×10 ₂	1.0×10 ₄
Sn-117m		7.0	1.9×10 ₂	4.0×10 ₋₁	1.1×10 ₁	3.0×10 ₃	8.2×10 ₄
Sn-119m		4.0×10 ₁	1.1×10 ₃	3.0×10 ₁	8.1×10 ₂	1.4×10 ₂	3.7×10 ₃
Sn-121m (a)		4.0×10 ₁	1.1×10 ₃	9.0×10 ₋₁	2.4×10 ₁	2.0	5.4×10 ₁
Sn-123		8.0×10 ₋₁	2.2×10	6.0×10 ₋₁	1.6×10 ₁	3.0×10 ₂	8.2×10 ₃
Sn-125		4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₃	1.1×10 ₅
Sn-126 (a)		6.0×10 ₋₁	1.6×10 ₁	4.0×10 ₋₁	1.1×10 ₁	1.0×10 ₋₃	2.8×10 ₋₂
Sr-82 (a)	Strontium (38)	2.0×10 ₋₁	5.4	2.0×10 ₋₁	5.4	2.3×10 ₃	6.2×10 ₄
Sr-85		2.0	5.4×10 ₁	2.0	5.4×10 ₁	8.8×10 ₂	2.4×10 ₄
Sr-85m		5.0	1.4×10 ₂	5.0	1.4×10 ₂	1.2×10 ₆	3.3×10 ₇
Sr-87m		3.0	8.1×10 ₁	3.0	8.1×10 ₁	4.8×10 ₅	1.3×10 ₇
Sr-89		6.0×10 ₋₁	1.6×10 ₁	6.0×10 ₋₁	1.6×10 ₁	1.1×10 ₃	2.9×10 ₄
Sr-90 (a)		3.0×10 ₋₁	8.1	3.0×10 ₋₁	8.1	5.1	1.4×10 ₂
Sr-91 (a)		3.0×10 ₋₁	8.1	3.0×10 ₋₁	8.1	1.3×10 ₅	3.6×10 ₆
Sr-92 (a)		1.0	2.7×10 ₁	3.0×10 ₋₁	8.1	4.7×10 ₅	1.3×10 ₇
T(H-3)	Tritium (1)	4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	3.6×10 ₂	9.7×10 ₃
Ta-178 (long-lived).	Tantalum (73)	1.0	2.7×10 ₁	8.0×10 ₋₁	2.2×10 ₁	4.2×10 ₆	1.1×10 ₈
Ta-179		3.0×10 ₁	8.1×10 ₂	3.0×10 ₁	8.1×10 ₂	4.1×10 ₁	1.1×10 ₃
Ta-182		9.0×10 ₋₁	2.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	2.3×10 ₂	6.2×10 ₃
Tb-157	Terbium (65)	4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	5.6×10 ₋₁	1.5×10 ₁
Tb-158		1.0	2.7×10 ₁	1.0	2.7×10 ₁	5.6×10 ₋₁	1.5×10 ₁
Tb-160		1.0	2.7×10 ₁	6.0×10 ₋₁	1.6×10 ₁	4.2×10 ₂	1.1×10 ₄
Tc-95m (a)	Technetium (43)	2.0	5.4×10 ₁	2.0	5.4×10 ₁	8.3×10 ₂	2.2×10 ₄
Tc-96		4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	1.2×10 ₄	3.2×10 ₅
Tc-96m (a)		4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	1.4×10 ₆	3.8×10 ₇
Tc-97		Unlimited	Unlimited	Unlimited	Unlimited	5.2×10 ₋₅	1.4×10 ₋₃
Tc-97m		4.0×10 ₁	1.1×10 ₃	1.0	2.7×10 ₁	5.6×10 ₂	1.5×10 ₄
Tc-98		8.0×10 ₋₁	2.2×10 ₁	7.0×10 ₋₁	1.9×10 ₁	3.2×10 ₋₅	8.7×10 ₋₄
Tc-99		4.0×10 ₁	1.1×10 ₃	9.0×10 ₋₁	2.4×10 ₁	6.3×10 ₋₄	1.7×10 ₋₂
Tc-99m		1.0×10 ₁	2.7×10 ₂	4.0	1.1×10 ₂	1.9×10 ₅	5.3×10 ₆
Te-121	Tellurium (52)	2.0	5.4×10 ₁	2.0	5.4×10 ₁	2.4×10 ₃	6.4×10 ₄
Te-121m		5.0	1.4×10 ₂	3.0	8.1×10 ₁	2.6×10 ₂	7.0×10 ₃
Te-123m		8.0	2.2×10 ₂	1.0	2.7×10 ₁	3.3×10 ₂	8.9×10 ₃
Te-125m		2.0×10 ₁	5.4×10 ₂	9.0×10 ₋₁	2.4×10 ₁	6.7×10 ₂	1.8×10 ₄
Te-127		2.0×10 ₁	5.4×10 ₂	7.0×10 ₋₁	1.9×10 ₁	9.8×10 ₄	2.6×10 ₆
Te-127m (a)		2.0×10 ₁	5.4×10 ₂	5.0×10 ₋₁	1.4×10 ₁	3.5×10 ₂	9.4×10 ₃
Te-129		7.0×10 ₋₁	1.9×10 ₁	6.0×10 ₋₁	1.6×10 ₁	7.7×10 ₅	2.1×10 ₇
Te-129m (a)		8.0×10 ₋₁	2.2×10 ₁	4.0×10 ₋₁	1.1×10 ₁	1.1×10 ₃	3.0×10 ₄
Te-131m (a)		7.0×10 ₋₁	1.9×10 ₁	5.0×10 ₋₁	1.4×10 ₁	3.0×10 ₄	8.0×10 ₅
Te-132 (a)		5.0×10 ₋₁	1.4×10 ₁	4.0×10 ₋₁	1.1×10 ₁	1.1×10 ₄	8.0×10 ₅
Th-227	Thorium (90)	1.0×10 ₁	2.7×10 ₂	5.0×10 ₋₃	1.4×10 ₋₁	1.1×10 ₃	3.1×10 ₄

Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
Th-228 (a)		5.0×10 ⁻¹	1.4×10 ₁	1.0×10 ⁻³	2.7×10 ⁻²	3.0×10 ₁	8.2×10 ₂
Th-229		5.0	1.4×10 ₂	5.0×10 ⁻⁴	1.4×10 ⁻²	7.9×10 ⁻³	2.1×10 ⁻¹
Th-230		1.0×10 ₁	2.7×10 ₂	1.0×10 ⁻³	2.7×10 ⁻²	7.6×10 ⁻⁴	2.1×10 ⁻²
Th-231		4.0×10 ₁	1.1×10 ₃	2.0×10 ⁻²	5.4×10 ⁻¹	2.0×10 ₄	5.3×10 ₅
Th-232		Unlimited	Unlimited	Unlimited	Unlimited	4.0×10 ⁻⁹	1.1×10 ⁻⁷
Th-234 (a)		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	8.6×10 ₂	2.3×10 ₄
Th(nat)		Unlimited	Unlimited	Unlimited	Unlimited	8.1×10 ⁻⁹	2.2×10 ⁻⁷
Ti-44 (a)	Titanium (22)	5.0×10 ⁻¹	1.4×10 ₁	4.0×10 ⁻¹	1.1×10 ₁	6.4	1.7×10 ₂
Tl-200	Thallium (81)	9.0×10 ⁻¹	2.4×10 ₁	9.0×10 ⁻¹	2.4×10 ₁	2.2×10 ₄	6.0×10 ₅
Tl-201		1.0×10 ₁	2.7×10 ₂	4.0	1.1×10 ₂	7.9×10 ₃	2.1×10 ₅
Tl-202		2.0	5.4×10 ₁	2.0	5.4×10 ₁	2.0×10 ₃	5.3×10 ₄
Tl-204		1.0×10 ₁	2.7×10 ₂	7.0×10 ⁻¹	1.9×10 ₁	1.7×10 ₁	4.6×10 ₂
Tm-167	Thulium (69)	7.0	1.9×10 ₂	8.0×10 ⁻¹	2.2×10 ₁	3.1×10 ₃	8.5×10 ₄
Tm-170		3.0	8.1×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	2.2×10 ₂	6.0×10 ₃
Tm-171		4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃
U-230 (fast lung absorption) (a) (d).	Uranium (92)	4.0×10 ₁	1.1×10 ₃	1.0×10 ⁻¹	2.7	1.0×10 ₃	2.7×10 ₄
U-230 (medium lung absorption) (a) (e).		4.0×10 ₁	1.1×10 ₃	4.0×10 ⁻³	1.1×10 ⁻¹	1.0×10 ₃	2.7×10 ₄
U-230 (slow lung absorption) (a) (f).		3.0×10 ₁	8.1×10 ₂	3.0×10 ⁻³	8.1×10 ⁻²	1.0×10 ₃	2.7×10 ₄
U-232 (fast lung absorption) (d).		4.0×10 ₁	1.1×10 ₃	1.0×10 ⁻²	2.7×10 ⁻¹	8.3×10 ⁻¹	2.2×10 ₁
U-232 (medium lung absorption) (e).		4.0×10 ₁	1.1×10 ₃	7.0×10 ⁻³	1.9×10 ⁻¹	8.3×10 ⁻¹	2.2×10 ₁
U-232 (slow lung absorption) (f).		1.0×10 ₁	2.7×10 ₂	1.0×10 ⁻³	2.7×10 ⁻²	8.3×10 ⁻¹	2.2×10 ₁
U-233 (fast lung absorption) (d).		4.0×10 ₁	1.1×10 ₃	9.0×10 ⁻²	2.4	3.6×10 ⁻⁴	9.7×10 ⁻³
U-233 (medium lung absorption) (e).		4.0×10 ₁	1.1×10 ₃	2.0×10 ⁻²	5.4×10 ⁻¹	3.6×10 ⁻⁴	9.7×10 ⁻³
U-233 (slow lung absorption) (f).		4.0×10 ₁	1.1×10 ₃	6.0×10 ⁻³	1.6×10 ⁻¹	3.6×10 ⁻⁴	9.7×10 ⁻³
U-234 (fast lung absorption) (d).		4.0×10 ₁	1.1×10 ₃	9.0×10 ⁻²	2.4	2.3×10 ⁻⁴	6.2×10 ⁻³
U-234 (medium lung absorption) (e).		4.0×10 ₁	1.1×10 ₃	2.0×10 ⁻²	5.4×10 ⁻¹	2.3×10 ⁻⁴	6.2×10 ⁻³
U-234 (slow lung absorption) (f).		4.0×10 ₁	1.1×10 ₃	6.0×10 ⁻³	1.6×10 ⁻¹	2.3×10 ⁻⁴	6.2×10 ⁻³
U-235 (all lung absorption types) (a),(d),(e),(f).		Unlimited	Unlimited	Unlimited	Unlimited	8.0×10 ⁻⁸	2.2×10 ⁻⁶

Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
U-236 (fast lung absorption) (d).		Unlimited	Unlimited	Unlimited	Unlimited	2.4×10 ⁻⁶	6.5×10 ⁻⁵
U-236 (medium lung absorption) (e).		4.0×10 ₁	1.1×10 ₃	2.0×10 ⁻²	5.4×10 ⁻¹	2.4×10 ⁻⁶	6.5×10 ⁻⁵
U-236 (slow lung absorption) (f).		4.0×10 ₁	1.1×10 ₃	6.0×10 ⁻³	1.6×10 ⁻¹	2.4×10 ⁻⁶	6.5×10 ⁻⁵
U-238 (all lung absorption types) (d),(e),(f).		Unlimited	Unlimited	Unlimited	Unlimited	1.2×10 ⁻⁸	3.4×10 ⁻⁷
U (nat)		Unlimited	Unlimited	Unlimited	Unlimited	2.6×10 ⁻⁸	7.1×10 ⁻⁷
U (enriched to 20% or less) (g).		Unlimited	Unlimited	Unlimited	Unlimited	see § 173.434	see § 173.434
U (dep)		Unlimited	Unlimited	Unlimited	Unlimited	see § 173.434	see § 173.434
V-48	Vanadium (23)	4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ⁻¹	1.1×10 ₁	6.3×10 ₃	1.7×10 ₅
V-49		4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	3.0×10 ₂	8.1×10 ₃
W-178 (a)	Tungsten (74)	9.0	2.4×10 ₂	5.0	1.4×10 ₂	1.3×10 ₃	3.4×10 ₄
W-181		3.0×10 ₁	8.1×10 ₂	3.0×10 ₁	8.1×10 ₂	2.2×10 ₂	6.0×10 ₃
W-185		4.0×10 ₁	1.1×10 ₃	8.0×10 ⁻¹	2.2×10 ₁	3.5×10 ₂	9.4×10 ₃
W-187		2.0	5.4×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	2.6×10 ₄	7.0×10 ₅
W-188 (a)		4.0×10 ⁻¹	1.1×10 ₁	3.0×10 ⁻¹	8.1	3.7×10 ₂	1.0×10 ₄
Xe-122 (a)	Xenon (54)	4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ⁻¹	1.1×10 ₁	4.8×10 ₄	1.3×10 ₆
Xe-123		2.0	5.4×10 ₁	7.0×10 ⁻¹	1.9×10 ₁	4.4×10 ₅	1.2×10 ₇
Xe-127		4.0	1.1×10 ₂	2.0	5.4×10 ₁	1.0×10 ₃	2.8×10 ₄
Xe-131m		4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	3.1×10 ₃	8.4×10 ₄
Xe-133		2.0×10 ₁	5.4×10 ₂	1.0×10 ₁	2.7×10 ₂	6.9×10 ₃	1.9×10 ₅
Xe-135		3.0	8.1×10 ₁	2.0	5.4×10 ₁	9.5×10 ₄	2.6×10 ₆
Y-87 (a)	Yttrium (39)	1.0	2.7×10 ₁	1.0	2.7×10 ₁	1.7×10 ₄	4.5×10 ₅
Y-88		4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ⁻¹	1.1×10 ₁	5.2×10 ₂	1.4×10 ₄
Y-90		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	2.0×10 ₄	5.4×10 ₅
Y-91		6.0×10 ⁻¹	1.6×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	9.1×10 ₂	2.5×10 ₄
Y-91m		2.0	5.4×10 ₁	2.0	5.4×10 ₁	1.5×10 ₆	4.2×10 ₇
Y-92		2.0×10 ⁻¹	5.4	2.0×10 ⁻¹	5.4	3.6×10 ₅	9.6×10 ₆
Y-93		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	1.2×10 ₅	3.3×10 ₆
Yb-169	Ytterbium (70)	4.0	1.1×10 ₂	1.0	2.7×10 ₁	8.9×10 ₂	2.4×10 ₄
Yb-175		3.0×10 ₁	8.1×10 ₂	9.0×10 ⁻¹	2.4×10 ₁	6.6×10 ₃	1.8×10 ₅
Zn-65	Zinc (30)	2.0	5.4×10 ₁	2.0	5.4×10 ₁	3.0×10 ₂	8.2×10 ₃
Zn-69		3.0	8.1×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	1.8×10 ₆	4.9×10 ₇
Zn-69m (a)		3.0	8.1×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	1.2×10 ₅	3.3×10 ₆
Zr-88	Zirconium (40)	3.0	8.1×10 ₁	3.0	8.1×10 ₁	6.6×10 ₂	1.8×10 ₄
Zr-93		Unlimited	Unlimited	Unlimited	Unlimited	9.3×10 ⁻⁵	2.5×10 ⁻³
Zr-95 (a)		2.0	5.4×10 ₁	8.0×10 ⁻¹	2.2×10 ₁	7.9×10 ₂	2.1×10 ₄
Zr-97 (a)		4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ⁻¹	1.1×10 ₁	7.1×10 ₄	1.9×10 ₆
Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
Ac-225 (a)	Actinium (89)	8.0×10 ⁻¹	2.2×10 ₁	6.0×10 ⁻³	1.6×10 ⁻¹	2.1×10 ₃	5.8×10 ₄

Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
Ac-227 (a)		9.0×10 ⁻¹	2.4×10 ₁	9.0×10 ⁻⁵	2.4×10 ⁻³	2.7	7.2×10 ₁
Ac-228		6.0×10 ⁻¹	1.6×10 ₁	5.0×10 ⁻¹	1.4×10 ₁	8.4×10 ₄	2.2×10 ₆
Ag-105	Silver (47)	2.0	5.4×10 ₁	2.0	5.4×10 ₁	1.1×10 ₃	3.0×10 ₄
Ag-108m (a)		7.0×10 ⁻¹	1.9×10 ₁	7.0×10 ⁻¹	1.9×10 ₁	9.7×10 ⁻¹	2.6×10 ₁
Ag-110m (a)		4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ⁻¹	1.1×10 ₁	1.8×10 ₂	4.7×10 ₃
Ag-111		2.0	5.4×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	5.8×10 ₃	1.6×10 ₅
Al-26	Aluminum (13)	1.0×10 ⁻¹	2.7	1.0×10 ⁻¹	2.7	7.0×10 ⁻⁴	1.9×10 ⁻²
Am-241	Americium (95)	1.0×10 ₁	2.7×10 ₂	1.0×10 ⁻³	2.7×10 ⁻²	1.3×10 ⁻¹	3.4
Am-242m (a)		1.0×10 ₁	2.7×10 ₂	1.0×10 ⁻³	2.7×10 ⁻²	3.6×10 ⁻¹	1.0×10 ₁
Am-243 (a)		5.0	1.4×10 ₂	1.0×10 ⁻³	2.7×10 ⁻²	7.4×10 ⁻³	2.0×10 ⁻¹
Ar-37	Argon (18)	4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	3.7×10 ₃	9.9×10 ₄
Ar-39		4.0×10 ₁	1.1×10 ₃	2.0×10 ₁	5.4×10 ₂	1.3	3.4×10 ₁
Ar-41		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	1.5×10 ₆	4.2×10 ₇
As-72	Arsenic (33)	3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	6.2×10 ₄	1.7×10 ₆
As-73		4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	8.2×10 ₂	2.2×10 ₄
As-74		1.0	2.7×10 ₁	9.0×10 ⁻¹	2.4×10 ₁	3.7×10 ₃	9.9×10 ₄
As-76		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	5.8×10 ₄	1.6×10 ₆
As-77		2.0×10 ₁	5.4×10 ₂	7.0×10 ⁻¹	1.9×10 ₁	3.9×10 ₄	1.0×10 ₆
At-211 (a)	Astatine (85)	2.0×10 ₁	5.4×10 ₂	5.0×10 ⁻¹	1.4×10 ₁	7.6×10 ₄	2.1×10 ₆
Au-193	Gold (79)	7.0	1.9×10 ₂	2.0	5.4×10 ₁	3.4×10 ₄	9.2×10 ₅
Au-194		1.0	2.7×10 ₁	1.0	2.7×10 ₁	1.5×10 ₄	4.1×10 ₅
Au-195		1.0×10 ₁	2.7×10 ₂	6.0	1.6×10 ₂	1.4×10 ₂	3.7×10 ₃
Au-198		1.0	2.7×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	9.0×10 ₃	2.4×10 ₅
Au-199		1.0×10 ₁	2.7×10 ₂	6.0×10 ⁻¹	1.6×10 ₁	7.7×10 ₃	2.1×10 ₅
Ba-131 (a)	Barium (56)	2.0	5.4×10 ₁	2.0	5.4×10 ₁	3.1×10 ₃	8.4×10 ₄
Ba-133		3.0	8.1×10 ₁	3.0	8.1×10 ₁	9.4	2.6×10 ₂
Ba-133m		2.0×10 ₁	5.4×10 ₂	6.0×10 ⁻¹	1.6×10 ₁	2.2×10 ₄	6.1×10 ₅
Ba-140 (a)		5.0×10 ⁻¹	1.4×10 ₁	3.0×10 ⁻¹	8.1	2.7×10 ₃	7.3×10 ₄
Be-7	Beryllium (4)	2.0×10 ₁	5.4×10 ₂	2.0×10 ₁	5.4×10 ₂	1.3×10 ₄	3.5×10 ₅
Be-10		4.0×10 ₁	1.1×10 ₃	6.0×10 ⁻¹	1.6×10 ₁	8.3×10 ⁻⁴	2.2×10 ⁻²
Bi-205	Bismuth (83)	7.0×10 ⁻¹	1.9×10 ₁	7.0×10 ⁻¹	1.9×10 ₁	1.5×10 ⁻³	4.2×10 ₄
Bi-206		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	3.8×10 ₃	1.0×10 ₅
Bi-207		7.0×10 ⁻¹	1.9×10 ₁	7.0×10 ⁻¹	1.9×10 ₁	1.9	5.2×10 ₁
Bi-210		1.0	2.7×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	4.6×10 ₃	1.2×10 ₅
Bi-210m (a)		6.0×10 ⁻¹	1.6×10 ₁	2.0×10 ⁻²	5.4×10 ⁻¹	2.1×10 ⁻⁵	5.7×10 ⁻⁴
Bi-212 (a)		7.0×10 ⁻¹	1.9×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	5.4×10 ₅	1.5×10 ₇
Bk-247	Berkelium (97)	8.0	2.2×10 ₂	8.0×10 ⁻⁴	2.2×10 ⁻²	3.8×10 ⁻²	1.0
Bk-249 (a)		4.0×10 ₁	1.1×10 ₃	3.0×10 ⁻¹	8.1	6.1×10 ₁	1.6×10 ₃
Br-76	Bromine (35)	4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ⁻¹	1.1×10 ₁	9.4×10 ₄	2.5×10 ₆
Br-77		3.0	8.1×10 ₁	3.0	8.1×10 ₁	2.6×10 ₄	7.1×10 ₅
Br-82		4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ₄	1.1×10 ₆
C-11	Carbon (6)	1.0	2.7×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	3.1×10 ₇	8.4×10 ₈
C-14		4.0×10 ₁	1.1×10 ₃	3.0	8.1×10 ₁	1.6×10 ⁻¹	4.5
Ca-41	Calcium (20)	Unlimited	Unlimited	Unlimited	Unlimited	3.1×10 ⁻³	8.5×10 ⁻²
Ca-45		4.0×10 ₁	1.1×10 ₃	1.0	2.7×10 ₁	6.6×10 ₂	1.8×10 ₄
Ca-47 (a)		3.0	8.1×10 ₁	3.0×10 ⁻¹	8.1	2.3×10 ₄	6.1×10 ₅

Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
Cd-109	Cadmium (48)	3.0×10 ₁	8.1×10 ₂	2.0	5.4×10 ₁	9.6×10 ₁	2.6×10 ₃
Cd-113m		4.0×10 ₁	1.1×10 ₃	5.0×10 ₋₁	1.4×10 ₁	8.3	2.2×10 ₂
Cd-115 (a)		3.0	8.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	1.9×10 ₄	5.1×10 ₅
Cd-115m		5.0×10 ₋₁	1.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	9.4×10 ₂	2.5×10 ₄
Ce-139	Cerium (58)	7.0	1.9×10 ₂	2.0	5.4×10 ₁	2.5×10 ₂	6.8×10 ₃
Ce-141		2.0×10 ₁	5.4×10 ₂	6.0×10 ₋₁	1.6×10 ₁	1.1×10 ₃	2.8×10 ₄
Ce-143		9.0×10 ₋₁	2.4×10 ₁	6.0×10 ₋₁	1.6×10 ₁	2.5×10 ₄	6.6×10 ₅
Ce-144 (a)		2.0×10 ₋₁	5.4	2.0×10 ₋₁	5.4	1.2×10 ₂	3.2×10 ₃
Cf-248	Californium (98)	4.0×10 ₁	1.1×10 ₃	6.0×10 ₋₃	1.6×10 ₋₁	5.8×10 ₁	1.6×10 ₃
Cf-249		3.0	8.1×10 ₁	8.0×10 ₋₄	2.2×10 ₋₂	1.5×10 ₋₁	4.1
Cf-250		2.0×10 ₁	5.4×10 ₂	2.0×10 ₋₃	5.4×10 ₋₂	4.0	1.1×10 ₂
Cf-251		7.0	1.9×10 ₂	7.0×10 ₋₄	1.9×10 ₋₂	5.9×10 ₋₂	1.6
Cf-252 (h)		5.0×10 ₋₂	1.4	3.0×10 ₋₃	8.1×10 ₋₂	2.0×10 ₁	5.4×10 ₂
Cf-253 (a)		4.0×10 ₁	1.1×10 ₃	4.0×10 ₋₂	1.1	1.1×10 ₃	2.9×10 ₄
Cf-254		1.0×10 ₋₃	2.7×10 ₋₂	1.0×10 ₋₃	2.7×10 ₋₂	3.1×10 ₂	8.5×10 ₃
Cl-36		1.0×10 ₁	2.7×10 ₂	6.0×10 ₋₁	1.6×10 ₁	1.2×10 ₋₃	3.3×10 ₋₂
Cl-38	Chlorine (17)	2.0×10 ₋₁	5.4	2.0×10 ₋₁	5.4	4.9×10 ₆	1.3×10 ₈
Cm-240		4.0×10 ₁	1.1×10 ₃	2.0×10 ₋₂	5.4×10 ₋₁	7.5×10 ₂	2.0×10 ₄
Cm-241		2.0	5.4×10 ₁	1.0	2.7×10 ₁	6.1×10 ₂	1.7×10 ₄
Cm-242		4.0×10 ₁	1.1×10 ₃	1.0×10 ₋₂	2.7×10 ₋₁	1.2×10 ₂	3.3×10 ₃
Cm-243	Curium (96)	9.0	2.4×10 ₂	1.0×10 ₋₃	2.7×10 ₋₂	1.9×10 ₋₃	5.2×10 ₁
Cm-244		2.0×10 ₁	5.4×10 ₂	2.0×10 ₋₃	5.4×10 ₋₂	3.0	8.1×10 ₁
Cm-245		9.0	2.4×10 ₂	9.0×10 ₋₄	2.4×10 ₋₂	6.4×10 ₋₃	1.7×10 ₋₁
Cm-246		9.0	2.4×10 ₂	9.0×10 ₋₄	2.4×10 ₋₂	1.1×10 ₋₂	3.1×10 ₋₁
Cm-247 (a)		3.0	8.1×10 ₁	1.0×10 ₋₃	2.7×10 ₋₂	3.4×10 ₋₆	9.3×10 ₋₅
Cm-248		2.0×10 ₋₂	5.4×10 ₋₁	3.0×10 ₋₄	8.1×10 ₋₃	1.6×10 ₋₅	4.2×10 ₋₃
Co-55		5.0×10 ₋₁	1.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	1.1×10 ₅	3.1×10 ₆
Co-56		3.0×10 ₋₁	8.1	3.0×10 ₋₁	8.1	1.1×10 ₃	3.0×10 ₄
Co-57	Cobalt (27)	1.0×10 ₁	2.7×10 ₂	1.0×10 ₁	2.7×10 ₂	3.1×10 ₂	8.4×10 ₃
Co-58		1.0	2.7×10 ₁	1.0	2.7×10 ₁	1.2×10 ₃	3.2×10 ₄
Co-58m		4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	2.2×10 ₅	5.9×10 ₆
Co-60		4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	4.2×10 ₁	1.1×10 ₃
Cr-51	Chromium (24)	3.0×10 ₁	8.1×10 ₂	3.0×10 ₁	8.1×10 ₂	3.4×10 ₃	9.2×10 ₄
Cs-129		4.0	1.1×10 ₂	4.0	1.1×10 ₂	2.8×10 ₄	7.6×10 ₅
Cs-131		3.0×10 ₁	8.1×10 ₂	3.0×10 ₁	8.1×10 ₂	3.8×10 ₃	1.0×10 ₅
Cs-132		1.0	2.7×10 ₁	1.0	2.7×10 ₁	5.7×10 ₃	1.5×10 ₅
Cs-134	Cesium (55)	7.0×10 ₋₁	1.9×10 ₁	7.0×10 ₋₁	1.9×10 ₁	4.8×10 ₁	1.3×10 ₃
Cs-134m		4.0×10 ₁	1.1×10 ₃	6.0×10 ₋₁	1.6×10 ₁	3.0×10 ₅	8.0×10 ₆
Cs-135		4.0×10 ₁	1.1×10 ₃	1.0	2.7×10 ₁	4.3×10 ₋₅	1.2×10 ₋₃
Cs-136		5.0×10 ₋₁	1.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	2.7×10 ₃	7.3×10 ₄
Cs-137 (a)		2.0	5.4×10 ₁	6.0×10 ₋₁	1.6×10 ₁	3.2	8.7×10 ₁
Cu-64		6.0	1.6×10 ₂	1.0	2.7×10 ₁	1.4×10 ₅	3.9×10 ₆
Cu-67		1.0×10 ₁	2.7×10 ₂	7.0×10 ₋₁	1.9×10 ₁	2.8×10 ₄	7.6×10 ₅
Dy-159		2.0×10 ₁	5.4×10 ₂	2.0×10 ₁	5.4×10 ₂	2.1×10 ₂	5.7×10 ₃
Dy-165	Dysprosium (66)	9.0×10 ₋₁	2.4×10 ₁	6.0×10 ₋₁	1.6×10 ₁	3.0×10 ₅	8.2×10 ₆
Dy-166 (a)		9.0×10 ₋₁	2.4×10 ₁	3.0×10 ₋₁	8.1	8.6×10 ₃	2.3×10 ₅

Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
Er-169	Erbium (68)	4.0×10 ₁	1.1×10 ₃	1.0	2.7×10 ₁	3.1×10 ₃	8.3×10 ₄
Er-171		8.0×10 ₋₁	2.2×10 ₁	5.0×10 ₋₁	1.4×10 ₁	9.0×10 ₄	2.4×10 ₆
Eu-147	Europium (63)	2.0	5.4×10 ₁	2.0	5.4×10 ₁	1.4×10 ₃	3.7×10 ₄
Eu-148		5.0×10 ₋₁	1.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	6.0×10 ₂	1.6×10 ₄
Eu-149		2.0×10 ₁	5.4×10 ₂	2.0×10 ₁	5.4×10 ₂	3.5×10 ₂	9.4×10 ₃
Eu-150 (short lived).		2.0	5.4×10 ₁	7.0×10 ₋₁	1.9×10 ₁	6.1×10 ₄	1.6×10 ₆
Eu-150 (long lived).		7 x 10 ⁻¹	1.9×10 ₁	7.0×10 ₋₁	1.9×10 ₁	6.1×10 ₄	1.6×10 ₆
Eu-152		1.0	2.7×10 ₁	1.0	2.7×10 ₁	6.5	1.8×10 ₂
Eu-152m		8.0×10 ₋₁	2.2×10 ₁	8.0×10 ₋₁	2.2×10 ₁	8.2×10 ₄	2.2×10 ₆
Eu-154		9.0×10 ₋₁	2.4×10 ₁	6.0×10 ₋₁	1.6×10 ₁	9.8	2.6×10 ₂
Eu-155		2.0×10 ₁	5.4×10 ₂	3.0	8.1×10 ₁	1.8×10 ₁	4.9×10 ₂
Eu-156		7.0×10 ₋₁	1.9×10 ₁	7.0×10 ₋₁	1.9×10 ₁	2.0×10 ₃	5.5×10 ₄
F-18	Fluorine (9)	1.0	2.7×10 ₁	6.0×10 ₋₁	1.6×10 ₁	3.5×10 ₆	9.5×10 ₇
Fe-52 (a)	Iron (26)	3.0×10 ₋₁	8.1	3.0×10 ₋₁	8.1	2.7×10 ₅	7.3×10 ₆
Fe-55		4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	8.8×10 ₁	2.4×10 ₃
Fe-59		9.0×10 ₋₁	2.4×10 ₁	9.0×10 ₋₁	2.4×10 ₁	1.8×10 ₃	5.0×10 ₄
Fe-60 (a)		4.0×10 ₁	1.1×10 ₃	2.0×10 ₋₁	5.4	7.4×10 ₋₄	2.0×10 ₋₂
Ga-67	Gallium (31)	7.0	1.9×10 ₂	3.0	8.1×10 ₁	2.2×10 ₄	6.0×10 ₅
Ga-68		5.0×10 ₋₁	1.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	1.5×10 ₆	4.1×10 ₇
Ga-72		4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	1.1×10 ₅	3.1×10 ₆
Gd-146 (a)	Gadolinium (64)	5.0×10 ₋₁	1.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	6.9×10 ₂	1.9×10 ₄
Gd-148		2.0×10 ₁	5.4×10 ₂	2.0×10 ₋₃	5.4×10 ₋₂	1.2	3.2×10 ₁
Gd-153		1.0×10 ₁	2.7×10 ₂	9.0	2.4×10 ₂	1.3×10 ₂	3.5×10 ₃
Gd-159		3.0	8.1×10 ₁	6.0×10 ₋₁	1.6×10 ₁	3.9×10 ₄	1.1×10 ₆
Ge-68 (a)	Germanium (32)	5.0×10 ₋₁	1.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	2.6×10 ₂	7.1×10 ₃
Ge-71		4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	5.8×10 ₃	1.6×10 ₅
Ge-77		3.0×10 ₋₁	8.1	3.0×10 ₋₁	8.1	1.3×10 ₅	3.6×10 ₆
Hf-172 (a)	Hafnium (72)	6.0×10 ₋₁	1.6×10 ₁	6.0×10 ₋₁	1.6×10 ₁	4.1×10 ₁	1.1×10 ₃
Hf-175		3.0	8.1×10 ₁	3.0	8.1×10 ₁	3.9×10 ₂	1.1×10 ₄
Hf-181		2.0	5.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	6.3×10 ₂	1.7×10 ₄
Hf-182		Unlimited	Unlimited	Unlimited	Unlimited	8.1×10 ₋₆	2.2×10 ₋₄
Hg-194 (a)	Mercury (80)	1.0	2.7×10 ₁	1.0	2.7×10 ₁	1.3×10 ₋₁	3.5
Hg-195m (a)		3.0	8.1×10 ₁	7.0×10 ₋₁	1.9×10 ₁	1.5×10 ₄	4.0×10 ₅
Hg-197		2.0×10 ₁	5.4×10 ₂	1.0×10 ₁	2.7×10 ₂	9.2×10 ₃	2.5×10 ₅
Hg-197m		1.0×10 ₁	2.7×10 ₂	4.0×10 ₋₁	1.1×10 ₁	2.5×10 ₄	6.7×10 ₅
Hg-203		5.0	1.4×10 ₂	1.0	2.7×10 ₁	5.1×10 ₂	1.4×10 ₄
Ho-166	Holmium (67)	4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	2.6×10 ₄	7.0×10 ₅
Ho-166m		6.0×10 ₋₁	1.6×10 ₁	5.0×10 ₋₁	1.4×10 ₁	6.6×10 ₋₂	1.8
I-123	Iodine (53)	6.0	1.6×10 ₂	3.0	8.1×10 ₁	7.1×10 ₄	1.9×10 ₆
I-124		1.0	2.7×10 ₁	1.0	2.7×10 ₁	9.3×10 ₃	2.5×10 ₅
I-125		2.0×10 ₁	5.4×10 ₂	3.0	8.1×10 ₁	6.4×10 ₂	1.7×10 ₄
I-126		2.0	5.4×10 ₁	1.0	2.7×10 ₁	2.9×10 ₃	8.0×10 ₄
I-129		Unlimited	Unlimited	Unlimited	Unlimited	6.5×10 ₋₆	1.8×10 ₋₄
I-131		3.0	8.1×10 ₁	7.0×10 ₋₁	1.9×10 ₁	4.6×10 ₃	1.2×10 ₅
I-132		4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	3.8×10 ₅	1.0×10 ₇

Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
I-133		7.0×10 ⁻¹	1.9×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	4.2×10 ₄	1.1×10 ₆
I-134		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	9.9×10 ₅	2.7×10 ₇
I-135 (a)		6.0×10 ⁻¹	1.6×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	1.3×10 ₅	3.5×10 ₆
In-111	Indium (49)	3.0	8.1×10 ₁	3.0	8.1×10 ₁	1.5×10 ₄	4.2×10 ₅
In-113m		4.0	1.1×10 ₂	2.0	5.4×10 ₁	6.2×10 ₅	1.7×10 ₇
In-114m (a)		1.0×10 ₁	2.7×10 ₂	5.0×10 ⁻¹	1.4×10 ₁	8.6×10 ₂	2.3×10 ₄
In-115m		7.0	1.9×10 ₂	1.0	2.7×10 ₁	2.2×10 ₅	6.1×10 ₆
Ir-189 (a)	Iridium (77)	1.0×10 ₁	2.7×10 ₂	1.0×10 ₁	2.7×10 ₂	1.9×10 ₃	5.2×10 ₄
Ir-190		7.0×10 ⁻¹	1.9×10 ₁	7.0×10 ⁻¹	1.9×10 ₁	2.3×10 ₃	6.2×10 ₄
Ir-192 (c)		1.0	2.7×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	3.4×10 ₂	9.2×10 ₃
Ir-194		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	3.1×10 ₄	8.4×10 ₅
K-40	Potassium (19)	9.0×10 ⁻¹	2.4×10 ₁	9.0×10 ⁻¹	2.4×10 ₁	2.4×10 ⁻⁷	6.4×10 ⁻⁶
K-42		2.0×10 ⁻¹	5.4	2.0×10 ⁻¹	5.4	2.2×10 ₅	6.0×10 ₆
K-43		7.0×10 ⁻¹	1.9×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	1.2×10 ₅	3.3×10 ₆
Kr-81	Krypton (36)	4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	7.8×10 ⁻⁴	2.1×10 ⁻²
Kr-85		1.0×10 ₁	2.7×10 ₂	1.0×10 ₁	2.7×10 ₂	1.5×10 ₁	3.9×10 ₂
Kr-85m		8.0	2.2×10 ₂	3.0	8.1×10 ₁	3.0×10 ₅	8.2×10 ₆
Kr-87		2.0×10 ⁻¹	5.4	2.0×10 ⁻¹	5.4	1.0×10 ₆	2.8×10 ₇
La-137	Lanthanum (57)	3.0×10 ₁	8.1×10 ₂	6.0	1.6×10 ₂	1.6×10 ⁻³	4.4×10 ⁻²
La-140		4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ⁻¹	1.1×10 ₁	2.1×10 ₄	5.6×10 ₅
Lu-172	Lutetium (71)	6.0×10 ⁻¹	1.6×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	4.2×10 ₃	1.1×10 ₅
Lu-173		8.0	2.2×10 ₂	8.0	2.2×10 ₂	5.6×10 ₁	1.5×10 ₃
Lu-174		9.0	2.4×10 ₂	9.0	2.4×10 ₂	2.3×10 ₁	6.2×10 ₂
Lu-174m		2.0×10 ₁	5.4×10 ₂	1.0×10 ₁	2.7×10 ₂	2.0×10 ₂	5.3×10 ₃
Lu-177		3.0×10 ₁	8.1×10 ₂	7.0×10 ⁻¹	1.9×10 ₁	4.1×10 ₃	1.1×10 ₅
Mg-28 (a)	Magnesium (12)	3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	2.0×10 ₅	5.4×10 ₆
Mn-52	Manganese (25)	3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	1.6×10 ₄	4.4×10 ₅
Mn-53		Unlimited	Unlimited	Unlimited	Unlimited	6.8×10 ⁻⁵	1.8×10 ⁻³
Mn-54		1.0	2.7×10 ₁	1.0	2.7×10 ₁	2.9×10 ₂	7.7×10 ₃
Mn-56		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	8.0×10 ₅	2.2×10 ₇
Mo-93	Molybdenum (42)	4.0×10 ₁	1.1×10 ₃	2.0×10 ₁	5.4×10 ₂	4.1×10 ⁻²	1.1
Mo-99 (a) (i)		1.0	2.7×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	1.8×10 ₄	4.8×10 ₅
N-13	Nitrogen (7)	9.0×10 ⁻¹	2.4×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	5.4×10 ₇	1.5×10 ₉
Na-22	Sodium (11)	5.0×10 ⁻¹	1.4×10 ₁	5.0×10 ⁻¹	1.4×10 ₁	2.3×10 ₂	6.3×10 ₃
Na-24		2.0×10 ⁻¹	5.4	2.0×10 ⁻¹	5.4	3.2×10 ₅	8.7×10 ₆
Nb-93m	Niobium (41)	4.0×10 ₁	1.1×10 ₃	3.0×10 ₁	8.1×10 ₂	8.8	2.4×10 ₂
Nb-94		7.0×10 ⁻¹	1.9×10 ₁	7.0×10 ⁻¹	1.9×10 ₁	6.9×10 ⁻³	1.9×10 ⁻¹
Nb-95		1.0	2.7×10 ₁	1.0	2.7×10 ₁	1.5×10 ₃	3.9×10 ₄
Nb-97		9.0×10 ⁻¹	2.4×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	9.9×10 ₅	2.7×10 ₇
Nd-147	Neodymium (60)	6.0	1.6×10 ₂	6.0×10 ⁻¹	1.6×10 ₁	3.0×10 ₃	8.1×10 ₄
Nd-149		6.0×10 ⁻¹	1.6×10 ₁	5.0×10 ⁻¹	1.4×10 ₁	4.5×10 ₅	1.2×10 ₇
Ni-59	Nickel (28)	Unlimited	Unlimited	Unlimited	Unlimited	3.0×10 ⁻³	8.0×10 ⁻²
Ni-63		4.0×10 ₁	1.1×10 ₃	3.0×10 ₁	8.1×10 ₂	2.1	5.7×10 ₁
Ni-65		4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ⁻¹	1.1×10 ₁	7.1×10 ₅	1.9×10 ₇
Np-235	Neptunium (93)	4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	5.2×10 ₁	1.4×10 ₃
Np-236 (short-lived).		2.0×10 ₁	5.4×10 ₂	2.0	5.4×10 ₁	4.7×10 ⁻⁴	1.3×10 ⁻²

Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
Np-236 (long-lived).		9.0×10 ₀	2.4×10 ₂	2.0×10 ₋₂	5.4×10 ₋₁	4.7×10 ₋₄	1.3×10 ₋₂
Np-237		2.0×10 ₁	5.4×10 ₂	2.0×10 ₋₃	5.4×10 ₋₂	2.6×10 ₋₅	7.1×10 ₋₄
Np-239		7.0	1.9×10 ₂	4.0×10 ₋₁	1.1×10 ₁	8.6×10 ₃	2.3×10 ₅
Os-185	Osmium (76)	1.0	2.7×10 ₁	1.0	2.7×10 ₁	2.8×10 ₂	7.5×10 ₃
Os-191		1.0×10 ₁	2.7×10 ₂	2.0	5.4×10 ₁	1.6×10 ₃	4.4×10 ₄
Os-191m		4.0×10 ₁	1.1×10 ₃	3.0×10 ₁	8.1×10 ₂	4.6×10 ₄	1.3×10 ₆
Os-193		2.0	5.4×10 ₁	6.0×10 ₋₁	1.6×10 ₁	2.0×10 ₄	5.3×10 ₅
Os-194 (a)		3.0×10 ₋₁	8.1	3.0×10 ₋₁	8.1	1.1×10 ₁	3.1×10 ₂
P-32	Phosphorus (15)	5.0×10 ₋₁	1.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	1.1×10 ₄	2.9×10 ₅
P-33		4.0×10 ₁	1.1×10 ₃	1.0	2.7×10 ₁	5.8×10 ₃	1.6×10 ₅
Pa-230 (a)	Protactinium (91)	2.0	5.4×10 ₁	7.0×10 ₋₂	1.9	1.2×10 ₃	3.3×10 ₄
Pa-231		4.0	1.1×10 ₂	4.0×10 ₋₄	1.1×10 ₋₂	1.7×10 ₋₃	4.7×10 ₋₂
Pa-233		5.0	1.4×10 ₂	7.0×10 ₋₁	1.9×10 ₁	7.7×10 ₂	2.1×10 ₄
Pb-201	Lead (82)	1.0	2.7×10 ₁	1.0	2.7×10 ₁	6.2×10 ₄	1.7×10 ₆
Pb-202		4.0×10 ₁	1.1×10 ₃	2.0×10 ₁	5.4×10 ₂	1.2×10 ₋₄	3.4×10 ₋₃
Pb-203		4.0	1.1×10 ₂	3.0	8.1×10 ₁	1.1×10 ₄	3.0×10 ₅
Pb-205		Unlimited	Unlimited	Unlimited	Unlimited	4.5×10 ₋₆	1.2×10 ₋₄
Pb-210 (a)		1.0	2.7×10 ₁	5.0×10 ₋₂	1.4	2.8	7.6×10 ₁
Pb-212 (a)		7.0×10 ₋₁	1.9×10 ₁	2.0×10 ₋₁	5.4	5.1×10 ₄	1.4×10 ₆
Pd-103 (a)	Palladium (46)	4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	2.8×10 ₃	7.5×10 ₄
Pd-107		Unlimited	Unlimited	Unlimited	Unlimited	1.9×10 ₋₅	5.1×10 ₋₄
Pd-109		2.0	5.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	7.9×10 ₄	2.1×10 ₆
Pm-143	Promethium (61)	3.0	8.1×10 ₁	3.0	8.1×10 ₁	1.3×10 ₂	3.4×10 ₃
Pm-144		7.0×10 ₋₁	1.9×10 ₁	7.0×10 ₋₁	1.9×10 ₁	9.2×10 ₁	2.5×10 ₃
Pm-145		3.0×10 ₁	8.1×10 ₂	1.0×10 ₁	2.7×10 ₂	5.2	1.4×10 ₂
Pm-147		4.0×10 ₁	1.1×10 ₃	2.0	5.4×10 ₁	3.4×10 ₁	9.3×10 ₂
Pm-148m (a)		8.0×10 ₋₁	2.2×10 ₁	7.0×10 ₋₁	1.9×10 ₁	7.9×10 ₂	2.1×10 ₄
Pm-149		2.0	5.4×10 ₁	6.0×10 ₋₁	1.6×10 ₁	1.5×10 ₄	4.0×10 ₅
Pm-151		2.0	5.4×10 ₁	6.0×10 ₋₁	1.6×10 ₁	2.7×10 ₄	7.3×10 ₅
Po-210	Polonium (84)	4.0×10 ₁	1.1×10 ₃	2.0×10 ₋₂	5.4×10 ₋₁	1.7×10 ₂	4.5×10 ₃
Pr-142	Praseodymium (59)	4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	4.3×10 ₄	1.2×10 ₆
Pr-143		3.0	8.1×10 ₁	6.0×10 ₋₁	1.6×10 ₁	2.5×10 ₃	6.7×10 ₄
Pt-188 (a)	Platinum (78)	1.0	2.7×10 ₁	8.0×10 ₋₁	2.2×10 ₁	2.5×10 ₃	6.8×10 ₄
Pt-191		4.0	1.1×10 ₂	3.0	8.1×10 ₁	8.7×10 ₃	2.4×10 ₅
Pt-193		4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	1.4	3.7×10 ₁
Pt-193m		4.0×10 ₁	1.1×10 ₃	5.0×10 ₋₁	1.4×10 ₁	5.8×10 ₃	1.6×10 ₅
Pt-195m		1.0×10 ₁	2.7×10 ₂	5.0×10 ₋₁	1.4×10 ₁	6.2×10 ₃	1.7×10 ₅
Pt-197		2.0×10 ₁	5.4×10 ₂	6.0×10 ₋₁	1.6×10 ₁	3.2×10 ₄	8.7×10 ₅
Pt-197m		1.0×10 ₁	2.7×10 ₂	6.0×10 ₋₁	1.6×10 ₁	3.7×10 ₅	1.0×10 ₇
Pu-236	Plutonium (94)	3.0×10 ₁	8.1×10 ₂	3.0×10 ₋₃	8.1×10 ₋₂	2.0×10 ₁	5.3×10 ₂
Pu-237		2.0×10 ₁	5.4×10 ₂	2.0×10 ₁	5.4×10 ₂	4.5×10 ₂	1.2×10 ₄
Pu-238		1.0×10 ₁	2.7×10 ₂	1.0×10 ₋₃	2.7×10 ₋₂	6.3×10 ₋₁	1.7×10 ₁
Pu-239		1.0×10 ₁	2.7×10 ₂	1.0×10 ₋₃	2.7×10 ₋₂	2.3×10 ₋₃	6.2×10 ₋₂
Pu-240		1.0×10 ₁	2.7×10 ₂	1.0×10 ₋₃	2.7×10 ₋₂	8.4×10 ₋₃	2.3×10 ₋₁
Pu-241 (a)		4.0×10 ₁	1.1×10 ₃	6.0×10 ₋₂	1.6	3.8	1.0×10 ₂
Pu-242		1.0×10 ₁	2.7×10 ₂	1.0×10 ₋₃	2.7×10 ₋₂	1.5×10 ₋₄	3.9×10 ₋₃

Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
Pu-244 (a)		4.0×10 ⁻¹	1.1×10 ₁	1.0×10 ⁻³	2.7×10 ⁻²	6.7×10 ⁻⁷	1.8×10 ⁻⁵
Ra-223 (a)	Radium (88)	4.0×10 ⁻¹	1.1×10 ₁	7.0×10 ⁻³	1.9×10 ⁻¹	1.9×10 ₃	5.1×10 ₄
Ra-224 (a)		4.0×10 ⁻¹	1.1×10 ₁	2.0×10 ⁻²	5.4×10 ⁻¹	5.9×10 ₃	1.6×10 ₅
Ra-225 (a)		2.0×10 ⁻¹	5.4	4.0×10 ⁻³	1.1×10 ⁻¹	1.5×10 ₃	3.9×10 ₄
Ra-226 (a)		2.0×10 ⁻¹	5.4	3.0×10 ⁻³	8.1×10 ⁻²	3.7×10 ⁻²	1.0
Ra-228 (a)		6.0×10 ⁻¹	1.6×10 ₁	2.0×10 ⁻²	5.4×10 ⁻¹	1.0×10 ₁	2.7×10 ₂
Rb-81	Rubidium (37)	2.0	5.4×10 ₁	8.0×10 ⁻¹	2.2×10 ₁	3.1×10 ₅	8.4×10 ₆
Rb-83 (a)		2.0	5.4×10 ₁	2.0	5.4×10 ₁	6.8×10 ₂	1.8×10 ₄
Rb-84		1.0	2.7×10 ₁	1.0	2.7×10 ₁	1.8×10 ₃	4.7×10 ₄
Rb-86		5.0×10 ⁻¹	1.4×10 ₁	5.0×10 ⁻¹	1.4×10 ₁	3.0×10 ₃	8.1×10 ₄
Rb-87		Unlimited	Unlimited	Unlimited	Unlimited	3.2×10 ⁻⁹	8.6×10 ⁻⁸
Rb(nat)		Unlimited	Unlimited	Unlimited	Unlimited	6.7×10 ₆	1.8×10 ₈
Re-184	Rhenium (75)	1.0	2.7×10 ₁	1.0	2.7×10 ₁	6.9×10 ₂	1.9×10 ₄
Re-184m		3.0	8.1×10 ₁	1.0	2.7×10 ₁	1.6×10 ₂	4.3×10 ₃
Re-186		2.0	5.4×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	6.9×10 ₃	1.9×10 ₅
Re-187		Unlimited	Unlimited	Unlimited	Unlimited	1.4×10 ⁻⁹	3.8×10 ⁻⁸
Re-188		4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ⁻¹	1.1×10 ₁	3.6×10 ₄	9.8×10 ₅
Re-189 (a)		3.0	8.1×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	2.5×10 ₄	6.8×10 ₅
Re(nat)		Unlimited	Unlimited	Unlimited	Unlimited	0.0	2.4×10 ⁻⁸
Rh-99	Rhodium (45)	2.0	5.4×10 ₁	2.0	5.4×10 ₁	3.0×10 ₃	8.2×10 ₄
Rh-101		4.0	1.1×10 ₂	3.0	8.1×10 ₁	4.1×10 ₁	1.1×10 ₃
Rh-102		5.0×10 ⁻¹	1.4×10 ₁	5.0×10 ⁻¹	1.4×10 ₁	4.5×10 ₁	1.2×10 ₃
Rh-102m		2.0	5.4×10 ₁	2.0	5.4×10 ₁	2.3×10 ₂	6.2×10 ₃
Rh-103m		4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	1.2×10 ₆	3.3×10 ₇
Rh-105		1.0×10 ₁	2.7×10 ₂	8.0×10 ⁻¹	2.2×10 ₁	3.1×10 ₄	8.4×10 ₅
Rn-222 (a)	Radon (86)	3.0×10 ⁻¹	8.1	4.0×10 ⁻³	1.1×10 ⁻¹	5.7×10 ₃	1.5×10 ₅
Ru-97	Ruthenium (44)	5.0	1.4×10 ₂	5.0	1.4×10 ₂	1.7×10 ₄	4.6×10 ₅
Ru-103 (a)		2.0	5.4×10 ₁	2.0	5.4×10 ₁	1.2×10 ₃	3.2×10 ₄
Ru-105		1.0	2.7×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	2.5×10 ₅	6.7×10 ₆
Ru-106 (a)		2.0×10 ⁻¹	5.4	2.0×10 ⁻¹	5.4	1.2×10 ₂	3.3×10 ₃
S-35	Sulphur (16)	4.0×10 ₁	1.1×10 ₃	3.0	8.1×10 ₁	1.6×10 ₃	4.3×10 ₄
Sb-122	Antimony (51)	4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ⁻¹	1.1×10 ₁	1.5×10 ₄	4.0×10 ₅
Sb-124		6.0×10 ⁻¹	1.6×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	6.5×10 ₂	1.7×10 ₄
Sb-125		2.0	5.4×10 ₁	1.0	2.7×10 ₁	3.9×10 ₁	1.0×10 ₃
Sb-126		4.0×10 ⁻¹	1.1×10 ₁	4.0×10 ⁻¹	1.1×10 ₁	3.1×10 ₃	8.4×10 ₄
Sc-44	Scandium (21)	5.0×10 ⁻¹	1.4×10 ₁	5.0×10 ⁻¹	1.4×10 ₁	6.7×10 ₅	1.8×10 ₇
Sc-46		5.0×10 ⁻¹	1.4×10 ₁	5.0×10 ⁻¹	1.4×10 ₁	1.3×10 ₃	3.4×10 ₄
Sc-47		1.0×10 ₁	2.7×10 ₂	7.0×10 ⁻¹	1.9×10 ₁	3.1×10 ₄	8.3×10 ₅
Sc-48		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	5.5×10 ₄	1.5×10 ₆
Se-75	Selenium (34)	3.0	8.1×10 ₁	3.0	8.1×10 ₁	5.4×10 ₂	1.5×10 ₄
Se-79		4.0×10 ₁	1.1×10 ₃	2.0	5.4×10 ₁	2.6×10 ⁻³	7.0×10 ⁻²
Si-31	Silicon (14)	6.0×10 ⁻¹	1.6×10 ₁	6.0×10 ⁻¹	1.6×10 ₁	1.4×10 ₆	3.9×10 ₇
Si-32		4.0×10 ₁	1.1×10 ₃	5.0×10 ⁻¹	1.4×10 ₁	3.9	1.1×10 ₂
Sm-145	Samarium (62)	1.0×10 ₁	2.7×10 ₂	1.0×10 ₁	2.7×10 ₂	9.8×10 ₁	2.6×10 ₃
Sm-147		Unlimited	Unlimited	Unlimited	Unlimited	8.5×10 ⁻¹	2.3×10 ⁻⁸
Sm-151		4.0×10 ₁	1.1×10 ₃	1.0×10 ₁	2.7×10 ₂	9.7×10 ⁻¹	2.6×10 ₁

Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
Sm-153		9.0	2.4×10 ₂	6.0×10 ₋₁	1.6×10 ₁	1.6×10 ₄	4.4×10 ₅
Sn-113 (a)	Tin (50)	4.0	1.1×10 ₂	2.0	5.4×10 ₁	3.7×10 ₂	1.0×10 ₄
Sn-117m		7.0	1.9×10 ₂	4.0×10 ₋₁	1.1×10 ₁	3.0×10 ₃	8.2×10 ₄
Sn-119m		4.0×10 ₁	1.1×10 ₃	3.0×10 ₁	8.1×10 ₂	1.4×10 ₂	3.7×10 ₃
Sn-121m (a)		4.0×10 ₁	1.1×10 ₃	9.0×10 ₋₁	2.4×10 ₁	2.0	5.4×10 ₁
Sn-123		8.0×10 ₋₁	2.2×10	6.0×10 ₋₁	1.6×10 ₁	3.0×10 ₂	8.2×10 ₃
Sn-125		4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₃	1.1×10 ₅
Sn-126 (a)		6.0×10 ₋₁	1.6×10 ₁	4.0×10 ₋₁	1.1×10 ₁	1.0×10 ₋₃	2.8×10 ₋₂
Sr-82 (a)	Strontium (38)	2.0×10 ₋₁	5.4	2.0×10 ₋₁	5.4	2.3×10 ₃	6.2×10 ₄
Sr-85		2.0	5.4×10 ₁	2.0	5.4×10 ₁	8.8×10 ₂	2.4×10 ₄
Sr-85m		5.0	1.4×10 ₂	5.0	1.4×10 ₂	1.2×10 ₆	3.3×10 ₇
Sr-87m		3.0	8.1×10 ₁	3.0	8.1×10 ₁	4.8×10 ₅	1.3×10 ₇
Sr-89		6.0×10 ₋₁	1.6×10 ₁	6.0×10 ₋₁	1.6×10 ₁	1.1×10 ₃	2.9×10 ₄
Sr-90 (a)		3.0×10 ₋₁	8.1	3.0×10 ₋₁	8.1	5.1	1.4×10 ₂
Sr-91 (a)		3.0×10 ₋₁	8.1	3.0×10 ₋₁	8.1	1.3×10 ₅	3.6×10 ₆
Sr-92 (a)		1.0	2.7×10 ₁	3.0×10 ₋₁	8.1	4.7×10 ₅	1.3×10 ₇
T(H-3)	Tritium (1)	4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	3.6×10 ₂	9.7×10 ₃
Ta-178 (long-lived).	Tantalum (73)	1.0	2.7×10 ₁	8.0×10 ₋₁	2.2×10 ₁	4.2×10 ₆	1.1×10 ₈
Ta-179		3.0×10 ₁	8.1×10 ₂	3.0×10 ₁	8.1×10 ₂	4.1×10 ₁	1.1×10 ₃
Ta-182		9.0×10 ₋₁	2.4×10 ₁	5.0×10 ₋₁	1.4×10 ₁	2.3×10 ₂	6.2×10 ₃
Tb-157	Terbium (65)	4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	5.6×10 ₋₁	1.5×10 ₁
Tb-158		1.0	2.7×10 ₁	1.0	2.7×10 ₁	5.6×10 ₋₁	1.5×10 ₁
Tb-160		1.0	2.7×10 ₁	6.0×10 ₋₁	1.6×10 ₁	4.2×10 ₂	1.1×10 ₄
Tc-95m (a)	Technetium (43)	2.0	5.4×10 ₁	2.0	5.4×10 ₁	8.3×10 ₂	2.2×10 ₄
Tc-96		4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	1.2×10 ₄	3.2×10 ₅
Tc-96m (a)		4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	1.4×10 ₆	3.8×10 ₇
Tc-97		Unlimited	Unlimited	Unlimited	Unlimited	5.2×10 ₋₅	1.4×10 ₋₃
Tc-97m		4.0×10 ₁	1.1×10 ₃	1.0	2.7×10 ₁	5.6×10 ₂	1.5×10 ₄
Tc-98		8.0×10 ₋₁	2.2×10 ₁	7.0×10 ₋₁	1.9×10 ₁	3.2×10 ₋₅	8.7×10 ₋₄
Tc-99		4.0×10 ₁	1.1×10 ₃	9.0×10 ₋₁	2.4×10 ₁	6.3×10 ₋₄	1.7×10 ₋₂
Tc-99m		1.0×10 ₁	2.7×10 ₂	4.0	1.1×10 ₂	1.9×10 ₅	5.3×10 ₆
Te-121	Tellurium (52)	2.0	5.4×10 ₁	2.0	5.4×10 ₁	2.4×10 ₃	6.4×10 ₄
Te-121m		5.0	1.4×10 ₂	3.0	8.1×10 ₁	2.6×10 ₂	7.0×10 ₃
Te-123m		8.0	2.2×10 ₂	1.0	2.7×10 ₁	3.3×10 ₂	8.9×10 ₃
Te-125m		2.0×10 ₁	5.4×10 ₂	9.0×10 ₋₁	2.4×10 ₁	6.7×10 ₂	1.8×10 ₄
Te-127		2.0×10 ₁	5.4×10 ₂	7.0×10 ₋₁	1.9×10 ₁	9.8×10 ₄	2.6×10 ₆
Te-127m (a)		2.0×10 ₁	5.4×10 ₂	5.0×10 ₋₁	1.4×10 ₁	3.5×10 ₂	9.4×10 ₃
Te-129		7.0×10 ₋₁	1.9×10 ₁	6.0×10 ₋₁	1.6×10 ₁	7.7×10 ₅	2.1×10 ₇
Te-129m (a)		8.0×10 ₋₁	2.2×10 ₁	4.0×10 ₋₁	1.1×10 ₁	1.1×10 ₃	3.0×10 ₄
Te-131m (a)		7.0×10 ₋₁	1.9×10 ₁	5.0×10 ₋₁	1.4×10 ₁	3.0×10 ₄	8.0×10 ₅
Te-132 (a)		5.0×10 ₋₁	1.4×10 ₁	4.0×10 ₋₁	1.1×10 ₁	1.1×10 ₄	8.0×10 ₅
Th-227	Thorium (90)	1.0×10 ₁	2.7×10 ₂	5.0×10 ₋₃	1.4×10 ₋₁	1.1×10 ₃	3.1×10 ₄
Th-228 (a)		5.0×10 ₋₁	1.4×10 ₁	1.0×10 ₋₃	2.7×10 ₋₂	3.0×10 ₁	8.2×10 ₂
Th-229		5.0	1.4×10 ₂	5.0×10 ₋₄	1.4×10 ₋₂	7.9×10 ₋₃	2.1×10 ₋₁
Th-230		1.0×10 ₁	2.7×10 ₂	1.0×10 ₋₃	2.7×10 ₋₂	7.6×10 ₋₄	2.1×10 ₋₂
Th-231		4.0×10 ₁	1.1×10 ₃	2.0×10 ₋₂	5.4×10 ₋₁	2.0×10 ₄	5.3×10 ₅

Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
Th-232		Unlimited	Unlimited	Unlimited	Unlimited	4.0×10 ⁻⁹	1.1×10 ⁻⁷
Th-234 (a)		3.0×10 ⁻¹	8.1	3.0×10 ⁻¹	8.1	8.6×10 ⁻²	2.3×10 ⁻⁴
Th(nat)		Unlimited	Unlimited	Unlimited	Unlimited	8.1×10 ⁻⁹	2.2×10 ⁻⁷
Ti-44 (a)	Titanium (22)	5.0×10 ⁻¹	1.4×10 ⁻¹	4.0×10 ⁻¹	1.1×10 ⁻¹	6.4	1.7×10 ⁻²
Tl-200	Thallium (81)	9.0×10 ⁻¹	2.4×10 ⁻¹	9.0×10 ⁻¹	2.4×10 ⁻¹	2.2×10 ⁻⁴	6.0×10 ⁻⁵
Tl-201		1.0×10 ⁻¹	2.7×10 ⁻²	4.0	1.1×10 ⁻²	7.9×10 ⁻³	2.1×10 ⁻⁵
Tl-202		2.0	5.4×10 ⁻¹	2.0	5.4×10 ⁻¹	2.0×10 ⁻³	5.3×10 ⁻⁴
Tl-204		1.0×10 ⁻¹	2.7×10 ⁻²	7.0×10 ⁻¹	1.9×10 ⁻¹	1.7×10 ⁻¹	4.6×10 ⁻²
Tm-167	Thulium (69)	7.0	1.9×10 ⁻²	8.0×10 ⁻¹	2.2×10 ⁻¹	3.1×10 ⁻³	8.5×10 ⁻⁴
Tm-170		3.0	8.1×10 ⁻¹	6.0×10 ⁻¹	1.6×10 ⁻¹	2.2×10 ⁻²	6.0×10 ⁻³
Tm-171		4.0×10 ⁻¹	1.1×10 ⁻³	4.0×10 ⁻¹	1.1×10 ⁻³	4.0×10 ⁻¹	1.1×10 ⁻³
U-230 (fast lung absorption) (a) (d).	Uranium (92)	4.0×10 ⁻¹	1.1×10 ⁻³	1.0×10 ⁻¹	2.7	1.0×10 ⁻³	2.7×10 ⁻⁴
U-230 (medium lung absorption) (a) (e).		4.0×10 ⁻¹	1.1×10 ⁻³	4.0×10 ⁻³	1.1×10 ⁻¹	1.0×10 ⁻³	2.7×10 ⁻⁴
U-230 (slow lung absorption) (a) (f).		3.0×10 ⁻¹	8.1×10 ⁻²	3.0×10 ⁻³	8.1×10 ⁻²	1.0×10 ⁻³	2.7×10 ⁻⁴
U-232 (fast lung absorption) (d).		4.0×10 ⁻¹	1.1×10 ⁻³	1.0×10 ⁻²	2.7×10 ⁻¹	8.3×10 ⁻¹	2.2×10 ⁻¹
U-232 (medium lung absorption) (e).		4.0×10 ⁻¹	1.1×10 ⁻³	7.0×10 ⁻³	1.9×10 ⁻¹	8.3×10 ⁻¹	2.2×10 ⁻¹
U-232 (slow lung absorption) (f).		1.0×10 ⁻¹	2.7×10 ⁻²	1.0×10 ⁻³	2.7×10 ⁻²	8.3×10 ⁻¹	2.2×10 ⁻¹
U-233 (fast lung absorption) (d).		4.0×10 ⁻¹	1.1×10 ⁻³	9.0×10 ⁻²	2.4	3.6×10 ⁻⁴	9.7×10 ⁻³
U-233 (medium lung absorption) (e).		4.0×10 ⁻¹	1.1×10 ⁻³	2.0×10 ⁻²	5.4×10 ⁻¹	3.6×10 ⁻⁴	9.7×10 ⁻³
U-233 (slow lung absorption) (f).		4.0×10 ⁻¹	1.1×10 ⁻³	6.0×10 ⁻³	1.6×10 ⁻¹	3.6×10 ⁻⁴	9.7×10 ⁻³
U-234 (fast lung absorption) (d).		4.0×10 ⁻¹	1.1×10 ⁻³	9.0×10 ⁻²	2.4	2.3×10 ⁻⁴	6.2×10 ⁻³
U-234 (medium lung absorption) (e).		4.0×10 ⁻¹	1.1×10 ⁻³	2.0×10 ⁻²	5.4×10 ⁻¹	2.3×10 ⁻⁴	6.2×10 ⁻³
U-234 (slow lung absorption) (f).		4.0×10 ⁻¹	1.1×10 ⁻³	6.0×10 ⁻³	1.6×10 ⁻¹	2.3×10 ⁻⁴	6.2×10 ⁻³
U-235 (all lung absorption types) (a),(d),(e),(f).		Unlimited	Unlimited	Unlimited	Unlimited	8.0×10 ⁻⁸	2.2×10 ⁻⁶
U-236 (fast lung absorption) (d).		Unlimited	Unlimited	Unlimited	Unlimited	2.4×10 ⁻⁶	6.5×10 ⁻⁵
U-236 (medium lung)		4.0×10 ⁻¹	1.1×10 ⁻³	2.0×10 ⁻²	5.4×10 ⁻¹	2.4×10 ⁻⁶	6.5×10 ⁻⁵

Symbol of radionuclide	Element and atomic number	A ₁ (TBq)	A ₁ (Ci)	A ₂ (TBq)	A ₂ (Ci)	Specific activity	
						(TBq/g)	(Ci/g)
absorption) (e).							
U-236 (slow lung absorption) (f).		4.0×10 ₁	1.1×10 ₃	6.0×10 ₋₃	1.6×10 ₋₁	2.4×10 ₋₆	6.5×10 ₋₅
U-238 (all lung absorption types) (d),(e),(f).		Unlimited	Unlimited	Unlimited	Unlimited	1.2×10 ₋₈	3.4×10 ₋₇
U (nat)		Unlimited	Unlimited	Unlimited	Unlimited	2.6×10 ₋₈	7.1×10 ₋₇
U (enriched to 20% or less) (g).		Unlimited	Unlimited	Unlimited	Unlimited	see § 173.434	see § 173.434
U (dep)		Unlimited	Unlimited	Unlimited	Unlimited	see § 173.434	see § 173.434
V-48	Vanadium (23)	4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	6.3×10 ₃	1.7×10 ₅
V-49		4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	3.0×10 ₂	8.1×10 ₃
W-178 (a)	Tungsten (74)	9.0	2.4×10 ₂	5.0	1.4×10 ₂	1.3×10 ₃	3.4×10 ₄
W-181		3.0×10 ₁	8.1×10 ₂	3.0×10 ₁	8.1×10 ₂	2.2×10 ₂	6.0×10 ₃
W-185		4.0×10 ₁	1.1×10 ₃	8.0×10 ₋₁	2.2×10 ₁	3.5×10 ₂	9.4×10 ₃
W-187		2.0	5.4×10 ₁	6.0×10 ₋₁	1.6×10 ₁	2.6×10 ₄	7.0×10 ₅
W-188 (a)		4.0×10 ₋₁	1.1×10 ₁	3.0×10 ₋₁	8.1	3.7×10 ₂	1.0×10 ₄
Xe-122 (a)	Xenon (54)	4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	4.8×10 ₄	1.3×10 ₆
Xe-123		2.0	5.4×10 ₁	7.0×10 ₋₁	1.9×10 ₁	4.4×10 ₅	1.2×10 ₇
Xe-127		4.0	1.1×10 ₂	2.0	5.4×10 ₁	1.0×10 ₃	2.8×10 ₄
Xe-131m		4.0×10 ₁	1.1×10 ₃	4.0×10 ₁	1.1×10 ₃	3.1×10 ₃	8.4×10 ₄
Xe-133		2.0×10 ₁	5.4×10 ₂	1.0×10 ₁	2.7×10 ₂	6.9×10 ₃	1.9×10 ₅
Xe-135		3.0	8.1×10 ₁	2.0	5.4×10 ₁	9.5×10 ₄	2.6×10 ₆
Y-87 (a)	Yttrium (39)	1.0	2.7×10 ₁	1.0	2.7×10 ₁	1.7×10 ₄	4.5×10 ₅
Y-88		4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	5.2×10 ₂	1.4×10 ₄
Y-90		3.0×10 ₋₁	8.1	3.0×10 ₋₁	8.1	2.0×10 ₄	5.4×10 ₅
Y-91		6.0×10 ₋₁	1.6×10 ₁	6.0×10 ₋₁	1.6×10 ₁	9.1×10 ₂	2.5×10 ₄
Y-91m		2.0	5.4×10 ₁	2.0	5.4×10 ₁	1.5×10 ₆	4.2×10 ₇
Y-92		2.0×10 ₋₁	5.4	2.0×10 ₋₁	5.4	3.6×10 ₅	9.6×10 ₆
Y-93		3.0×10 ₋₁	8.1	3.0×10 ₋₁	8.1	1.2×10 ₅	3.3×10 ₆
Yb-169	Ytterbium (70)	4.0	1.1×10 ₂	1.0	2.7×10 ₁	8.9×10 ₂	2.4×10 ₄
Yb-175		3.0×10 ₁	8.1×10 ₂	9.0×10 ₋₁	2.4×10 ₁	6.6×10 ₃	1.8×10 ₅
Zn-65	Zinc (30)	2.0	5.4×10 ₁	2.0	5.4×10 ₁	3.0×10 ₂	8.2×10 ₃
Zn-69		3.0	8.1×10 ₁	6.0×10 ₋₁	1.6×10 ₁	1.8×10 ₆	4.9×10 ₇
Zn-69m (a)		3.0	8.1×10 ₁	6.0×10 ₋₁	1.6×10 ₁	1.2×10 ₅	3.3×10 ₆
Zr-88	Zirconium (40)	3.0	8.1×10 ₁	3.0	8.1×10 ₁	6.6×10 ₂	1.8×10 ₄
Zr-93		Unlimited	Unlimited	Unlimited	Unlimited	9.3×10 ₋₅	2.5×10 ₋₃
Zr-95 (a)		2.0	5.4×10 ₁	8.0×10 ₋₁	2.2×10 ₁	7.9×10 ₂	2.1×10 ₄
Zr-97 (a)		4.0×10 ₋₁	1.1×10 ₁	4.0×10 ₋₁	1.1×10 ₁	7.1×10 ₄	1.9×10 ₆

^(a)A₁ and A₂ values include contributions from daughter nuclides with half-lives less than 10 days.

^(b)Reserved

^(c)The quantity may be determined from a measurement of the rate of decay or a measurement of the radiation level at a prescribed distance from the source.

^(d)These values apply only to compounds of uranium that take the chemical form of UF₆, UO₂F₂ and UO₂(NO₃)₂ in both normal and accident conditions transport.

- ^(e)These values apply only to compounds of uranium that take the chemical form of UO_3 , UF_4 , UCl_4 and hexavalent compounds in both normal and accident conditions transport.
- ^(f)These values apply to all compounds of uranium other than those specified in notes (d) and (e) in the table.
- ^(g)These values apply to unirradiated uranium only.
- ^(h) $A_1 = 0.1 \text{ TBq}$ (2.7 Ci) and $A_2 = 0.001 \text{ TBq}$ (0.027 Ci) for Cf-252 domestic use.
- ⁽ⁱ⁾ $A_2 = 0.74 \text{ TBq}$ (20 Ci) Mo-99 for domestic use.

RPR 14LQ. RADIOISOTOPE LIMITED QUANTITY SHIPMENT

This form is to be completed **for shipment of a Limited Quantity of Radioactive Material to a non-University licensee**. RPR 14VA, "UU-VA RADIOACTIVE MATERIAL TRANSFER", may be used as an equivalent form for transfers between the VAMC and the University. The individual desiring authorization to ship the material shall complete this form and submit it to the RSO's designee for approval **before the material is shipped**. **International shipments must attach RPR 14IS.**

Shipper (University of Utah Responsible User):

Name: _____ Phone: _____

Department: _____ Address: _____

Receiver (Individual and Organization):

Name: _____ Phone: _____

Address: _____

Authorization:

Receiver's License #: _____ Expiration Date: _____

Receiver's RSO: _____ Phone: _____

License copy on file? Yes or Other verification: _____

Package Contents and Hazardous Material Classification:

Initials

Contents

Radionuclide: _____ Activity: _____ mCi DOT A₂ Limit: _____ TBq
(_____ Ci)

Limited Quantity Criteria

_____ Solid material less than 10^{-3} A₂ (normal form) [173.425]

_____ Liquid material (other than Tritium) less than 10^{-4} A₂. [173.425]

_____ Tritiated water? (Y/N) _____ Concentration: _____ (TBq/L)

Less than total activity specified in 173.425. (if the concentration is less than 0.1 Ci/L than limit is 1,000 Ci, if concentration is between 0.1 Ci to 1.0 Ci/L than limit is 100 Ci, and if concentration is greater than 1.0 Ci/L than limit is 1.0 Ci)

_____ Less than 15 grams U-235. [173.421(a)(5)]

_____ Material meets the requirements to be shipped as an instrument or article as specified in 173.425.

Note: This does not apply to an instrument that has a check source attached to it. These values were intended for items such as radioactive compasses or gun sights.

_____ The package contains no hazardous material other than radioactive material.

Small quantities of flammable materials may take exceptions given the following [173.4]:

_____ Less than Thirty (30) ml or thirty (30) g (1 ounce) of material

_____ Inner receptacle constructed of plastic having a minimum thickness of no less than 0.2 mm, or glass or metal.

_____ Removable closure of the Inner receptacle held securely in place with wire, tape or other positive means

_____ Inner receptacle is packed with absorbent material that does not react chemically and is capable of absorbing the entire contents (if liquid) of receptacle

Container

_____ The package meets the intents of 173.24 and 173.421.

_____ A 4G box is being used to ship small quantity of flammable material [173.4]

Labels and Markings

_____ Names of shipper and receiver on outside of package.

_____ The following must be on outside of the package "Radioactive material, excepted package-limited quantity of material, UN2910."

_____ If package is to be shipped on a passenger-carrying aircraft, the following certification is required on the shipping paper: "**The above-named materials are intended for use in, or incident to, research or medical diagnosis or treatment.**" [172.204(c)(4)]

_____ The package bears the marking "Radioactive" on an internal surface in such a manner that a warning of the presence of radioactive material is visible on opening the package.

_____ If a small quantity (<30 ml) of flammable liquid is also being shipped with the limited quantity of radioactive material, the following statement must appear on the *outside* of the package: "**This package conforms to the conditions and limitations in 49 CFR 173.4**" [173.4]

Prepared by (signature): _____

Date: _____

Initials

Radiation Survey

Exposure rates measured with _____ (Model) _____

Ser. No.: _____ Calibration date: _____

Maximum at surface = _____ mR/hr

_____ Less than 0.005mSv/h (0.5 mR/hr) at all points on the surface of the container. [173.421]

Contamination measured with _____ (Model) _____

Ser. No.: _____ Efficiency: _____ cpm/dpm Calibration date: _____

Count rates: Gross: _____ cpm Background: _____ cpm Net: _____ cpm

_____ Less than 110 Bq (3 nCi) or 6600 dpm alpha and less than 1100 Bq (30 nCi) or 66000 dpm beta-gamma removable contamination **per wipe of 300 cm²**. [173.443(a)]

Surveyed by (signature): _____ Date: _____

RSO approval (signature): _____ Date: _____

RPR 14IS. INTERNATIONAL EXCEPTED QUANTITY SHIPMENT

This form is to accompany RPR 14LQ.

Labeling

- _____ If the package contains another hazardous material in small quantities other than radioactive material the following label must be on the outside of the package. (IATA Dangerous Goods Regulations 2.7.6) Note: The label **must** have red diagonal hatching. The label may be printed in black and red on white paper or it may be printed in red only on white paper.

DANGEROUS GOODS IN EXCEPTED QUANTITIES

This package contains dangerous goods in excepted small quantities and is in all respects in compliance with the applicable international and national government regulations and the IATA Dangerous Goods Regulations

Signature of Shipper

Title Date

Name and address of Shipper

This package contains substance(s) in Class(es)
(check applicable box(es))

Class: 2 3 4 5 6 8 9
☐ ☐ ☐ ☐ ☐ ☐ ☐

and the applicable UN Numbers are:

Documentation

- _____ If only a limited quantity of radioactive material is being shipped, the proper shipping name, “Radioactive material, excepted package - limited quantity of material, UN2910” must be listed on the air waybill in the Nature and Quantity of Goods box. Units of activity must be in SI units (Becquerel). Units of Curies may be used in parenthesis following the SI units [IATA 10.8.8.3.3].
- _____ If an excepted quantity of hazardous material other than radioactive material is being shipped, “**Dangerous Goods in Excepted Quantities**” must be listed on the air waybill in the *Nature and Quantities of Goods* box [IATA 2.7.7.2].
- _____ If both a limited quantity of radioactive material and an excepted quantity of another hazardous material are being shipped, the wording “Dangerous Goods in Excepted Quantities” and “Radioactive material, excepted package - limited quantity of material, UN2910” must be placed in the Nature and Quantities of Goods box [IATA 2.7.7.2].