

Radioactive Material Safety Data Sheet

This data sheet presents information on radioisotopes only.

For information on chemical compounds incorporating this radionuclide, see the relevant Material Safety Data Sheet.

Radium-226

Part 1 – Radioactive Material Identification

Common Names:	Radium-226	Chemical Symbol:	Ra-226 or ²²⁶ Ra
Atomic Number:	88	Mass Number:	226 (138 neutrons)
Chemical Form:	Radium bromide or radium chloride	Physical Form:	A pellet or solution housed within a ceramic outer-housing.

Part 2 – Radiation Characteristics

Physical half-life: 1,603 years **Specific Activity (GBq/g):** 36.6

Principle Emissions	E ^{Max} (keV)	E ^{eff} (keV)	Dose Rate (□Sv/h/GBq at 1m)	Shielding Required
Beta* (□)	-	-	-	-
Gamma (□) / X-Rays ^b	186 (32.8%) ²¹⁴ Bi 609 (46%) 1112 (15%) 1838 (16%) ²¹⁴ Pb 295 (19%) 352 (37%)	-	318 ^a	HVL Lead: 1.7 cm
Alpha (□)	4,785 (94.6%)	-	-	-
Neutron (n)	-	-	-	-

□ Where Beta radiation is present, Bremsstrahlung radiation will be produced. Shielding may be required.

Note: Only emissions with abundance greater than 10% are shown.

^a *Handbook of Health Physics and Radiological Health*, Lippincott Williams & Wilkins, Third Edition, 1998

^b Only the 186 keV photon is native to radium-226, the remainder are due to the short lived daughter products bismuth-214 and lead-214. In a sealed source these daughter products would be in secular equilibrium with the parent radium atoms.

Progeny: Radon-222 (Ra-222)

Part 3 – Detection and Measurement

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Exemption Quantity (EQ):	10,000 Bq
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Part 6 – Non-Radiological Hazards

None identified at this time.

OSHA Permissible Exposure Limit (PEL)

No limit set at this time

Part 7 - Emergency Procedures

*The following is a guide for first responders. The following actions, including remediation, should be carried out by qualified individuals. In cases where life-threatening injury has resulted, **first** treat the injury, **second** deal with personal decontamination.*

Personal Decontamination Techniques

- Wash well with soap and water and monitor skin
- Do not abrade skin, only blot dry
- Decontamination of clothing and surfaces are covered under operating and emergency procedures

Spill and Leak Control

- Alert everyone in the area
- Confine the problem or emergency (includes the use of absorbent material)
- Clear area
- Summon Aid

Damage to Sealed Radioactive Source Holder

- Evacuate the immediate vicinity around the source holder
- Place a barrier at a safe distance from the source holder (min. 5 meters)
- Identify area as a radiation hazard
- Contact emergency number posted on local warning sign

Suggested Emergency Protective Equipment

- Gloves
- Footwear Covers
- Safety Glasses
- Outer layer or easily removed protective clothing (as situation requires)

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