



**Canadian Nuclear Safety Services Inc.**  
**Consultants in Radiation Safety and Hazardous Materials**  
**Management**

Visit us at: <http://www.nuclearsafety.ca>

### Radiation Safety Data Sheet

This data sheet presents information on radioisotopes only. CNSC does not guarantee data accuracy.  
 For information on chemical compounds incorporating this radionuclide, see the relevant Material Safety Data Sheet.

Part 1 - RADIOACTIVE MATERIAL IDENTIFICATION			
Chemical Symbol:	Pu	Common Names:	PLUTONIUM
Atomic Weight:	239	Atomic Number:	94

Part 2 - RADIATION CHARACTERISTICS
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**Physical Half-Life:** 24065 years

A CNSC license is not required if the amount of radioactive nuclides possessed is less than one Exemption Quantity.

Principal Emissions	Approximate energies (MeV) and Intensities	Eeff (MeV)	Dose Rate at 1m Distance (mSv/hGBq)	Shielding Requires TVL Lead (cm)
Gamma & X-rays	U X-rays, 0.039 (0.007%) 0.052 (0.020%), 0.129 (0.005%) 0.375 (0.0012%) 0.414 (0.0012%), 0.65 (8x10 <sup>-5</sup> ) 0.77 (2x10 <sup>-5</sup> ) 1.1291E-1		8.145-3 0.02 (PF)	0.003
Alpha	5.16 (88%, doublet) 5.11 (11%) 5.156 ICRP			

Progeny            U-235

Part 3 - DETECTION AND MEASUREMENT
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**Method of Detection:** 1) Thin end window Geiger Mueller Tube 2) Zinc sulphide detector

**Dosimetry:**

External: TLD (whole body & skin)    \_\_\_    Extremity    \_\_\_    Neutron    \_\_\_

Internal: Lungs, Liver, Bone

#### Part 4 - PREVENTATIVE MEASURES

Low energy gamma radiation from sealed sources. No protective clothing is necessary for work with sealed sources.

Optimize time, distance, shielding. Manipulate sealed sources remotely to minimize extremity doses. Consult CNSC license for requirements concerning engineering controls, protective equipment, and special storage requirements.

#### Part 5 – CONTROL LEVELS

##### Effective Dose Coefficients

F (fast)		M (moderate)		S (slow)	
Ingestion	Inhalation	Ingestion 2.5E-7	Inhalation 4.7E-5	Ingestion 5.3E-8	Inhalation 1.5E-5
Maximum release Concentration (as on current form)		Atmosphere (Bq/m <sup>3</sup> ) default	Sewer Bq/L Default	Landfill/incinerator (Bq/Kg) default	
Exemption Toxicity		3.7 E+3 Bq			

#### Part 6- 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

##### Emergency Protective Equipment, Minimum Requirements

Gloves

Footwear Covers

Safety Glasses

Outer layer or easily removed protective clothing

Suitable respirator selected