^{241}Am/Be

RADIATION SERVICES WA

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MATERIAL SAFETY DATA SHEET

Physical Properties

Isotope:	Americium-241 / Beryllium	Symbol:	Am-241/Be or ^{241}Am/Be
Atomic Number:	95	Mass Number:	241 (146 neutrons)
Chemical Form:	Americium Oxide with Beryllium Metal		
Physical Form:	Americium Oxide mixed with Berryllium Metal Encapsulated in Steel or Ceramic Cylinder		

Radiological Characteristics

Half-life	432.2 years	Specific Activity	127 GBq/g
Gamma-factor	85 uSv/h / GBq @ 1m	Half Value Layer	
		- Gamma	0.3 mm lead
		- Neutron	66 mm paraffin wax
Neutron-factor	2 uSv/h / GBq @ 1m		
Security D value:	60 GBq	Decays to:	Np-237

Radiation emitted:

Radiation	Energy (keV)
Alpha	5443 (12.8%) 5486 (85.2%)
Gamma	13.9 (42.7%) 59.5 (35.9%)

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Hazard Identification

Am-241 is a radioactive isotope. Radiation emitted from Am-241 interacts with beryllium metal to produce neutron radiation, which can be difficult to measure using conventional radiation survey meters.

Radioactive materials are known to be carcinogenic, however health risks are dependent on the type and nature of exposure to radioactive material and ionising radiation (that may be emitted from radioactive material).

Adverse health effects are possible from either internal or external exposure to radiation & radioactive material.

Tissue reaction effects (acute, deterministic effects) are only possible from exposure to large radiation doses.

Stochastic effects (chronic, long term), such as cancer, are possible from any radiation exposure, and risk is generally accepted to be 5% (chance of contracting a fatal cancer) from 1000 mSv of radiation exposure. In perspective, on average, an Australian is likely to receive an average of 1.5mSv of dose each year.

First Aid Measures

In case of emergency life saving rescue and first-aid measures should be taken. Rescue crew to be made aware of possible contact with radioactive material. Delayed effects can be expected after exposure.

Skin contact: Immediately decontaminate skin.

Ingestion: Induce vomiting to remove ingested material from the body.

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Emergency Procedures

This advice is for trained and competent radiological first responders.

Assess nature and magnitude of incident – is there damage to the package, device or source itself. Consider the possibility of potential contamination.

In case of emergency life saving rescue and first-aid measures should be taken. Rescue crew to be made aware of possible contact with radioactive material.

Notify the Responsible Person (owner), Radiation Safety Officer, who will notify the relevant regulatory body. Response shall be in accordance with existing emergency response plans.

Establish 5m exclusion zone and warning signage. If required, rescue personnel and administer first-aid as required.

General personal precautions & PPE:

- Obtain radiation survey meter and personal dosimeters (if possible)
- Keep unprotected persons away
- Avoid contact & handling of damaged material
- Wear protective equipment (nitrile gloves, respiratory protection, safety glasses, consider Tyvec suit & footwear covers)

Personal decontamination (if required):

- Wash skin well with soap and water (decon-90 if available)
- Remove exposed clothing, if required
- Assess with contamination survey meter (if available)
- Do not scrub skin – dry blot only

Damaged source or leakage control:

- Confine package / device / source and protect from further damage – consider the use of absorbent materials
- Assess locality of drains, surface-water, groundwater and soft ground (soil, etc)
- Recovery of device/source to be considered carefully

Firefighting:

- Consider SCBA (self-contained breathing apparatus) and full protective equipment.

Storage and Transport

Transport shall only be performed by authorised and competent personnel - a licence for the transport of radioactive material is required in most jurisdictions.

During transport or while stored, radioactive material shall be appropriately segregated from:

- Other dangerous goods
- Food and food packaging
- Personnel (consider dose)
- Undeveloped photographic film

Disposal Considerations

Disposal shall only be performed after consultation with the relevant radiological regulator. Use of a radiation service provider is recommended.

Typical disposal pathways include:

- Return to source (or device) manufacturer
- Transfer to another licensed user
- Transfer to an authorised radiation service provider (such as Radiation Services WA)
- In some jurisdictions (eg Western Australia), it is possible to transfer the source to an approved intractable waste disposal facility

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Disclaimer

Safety Data Sheets (SDS) are not generally required for radioactive materials.

Radiation Services WA has produced this SDS for use by clients, with the best available information at the time of production. Radiation Services WA makes no guarantee of the accuracy of the information contained herein.

For further information, please contact:

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