SECTION 1: Identification

1.1 GHS Product identifier

Product name Americium

1.2 Other means of identification

Product number -
Other names Americium;

1.3 Recommended use of the chemical and restrictions on use

Identified uses Radionuclides (radioactive materials)
Uses advised against no data available

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

no data available

2.2 GHS label elements, including precautionary statements

Pictogram(s) no data available
Signal word no data available
Hazard statement(s) no data available
Precautionary statement(s)
Prevention no data available
Response no data available
Storage no data available
Disposal no data available

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Americium	Americium	7440-35-9	231-144-4	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately. Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

Following skin contact

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

Following eye contact

Rinse with pure water for at least 15 minutes. Consult a doctor.

Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

4.2 Most important symptoms/effects, acute and delayed

no data available

4.3 Indication of immediate medical attention and special treatment needed, if necessary

Basic Treatment. Establish a patent airway (oropharyngeal or nasopharyngeal airway, if needed). Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 mL/min. Monitor for shock and treat if necessary. Anticipate seizures and treat if necessary. Perform routine emergency care for associated injuries. ... Perform routine basic life support care as necessary. Radioactives I, II, and III

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Use dry chemical, carbon dioxide or alcohol-resistant foam.

5.2 Specific hazards arising from the chemical

no data available

5.3 Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours.Avoid contacting with skin and eye. Use personal protective equipment.Wear chemical impermeable gloves. Ensure adequate ventilation.Remove all sources of ignition. Evacuate personnel to safe areas.Keep people away from and upwind of spill/leak.

6.2 Environmental precautions

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

Decontamination is most successful when the material can be recycled for use in a nuclear facility since the need to prove releasability (cleanliness) is eliminated. Nevertheless, cleaning material for unrestricted release is also possible in some cases. It may also be possible to decontaminate an item enough to change its classification from TRU/transuranic/ waste to LLW /low-level waste/, thereby allowing immediate disposal of the item, while a relatively small quantity of decontamination waste is stored as TRU waste. Electropolishing to remove the thinnest metal surface has been very effective and produces a relatively small waste volume, especially when one of the wetted sponge units is used rather than an emersion tank. Surface scabbling has been used in decontamination of concrete, and various abrasive blasting methods have also been effective. Strippable and self-stripping coatings may be used to decontaminate surfaces, even though the primary application of strippable coatings has been in preventing contamination of surfaces. Plutonium facilities

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2 Conditions for safe storage, including any incompatibilities

Store the container tightly closed in a dry, cool and well-ventilated place. Store apart from foodstuff containers or incompatible materials.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

no data available

Biological limit values

no data available

8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

Skin protection

Wear fire/flame resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	no data available
Colour	Silvery metal /Zero valence americium/
Odour	no data available
Melting point/freezing point	1175ÂºC

Boiling point or initial boiling point and boiling range	2,067 deg C /Americium metal/
Flammability	no data available
Lower and upper explosion limit/flammability limit	no data available
Flash point	no data available
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	Dissolves readily in aq HCl; insoluble in liquid ammonia. /Americium metal/
Partition coefficient n-octanol/water	no data available
Vapour pressure	no data available
Density and/or relative density	13.671/Americium metal/
Relative vapour density	no data available
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

no data available

10.2 Chemical stability

Am3+ ion /is/ stable; difficult to oxidize. from table

10.3 Possibility of hazardous reactions

no data available

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

no data available

10.6 Hazardous decomposition products

no data available

SECTION 11: Toxicological information

Acute toxicity

- Oral: no data available
- Inhalation: no data available
- Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

There is sufficient evidence in experimental animals for the carcinogenicity of mixed alpha-particle emitters (radium-224, radium-226, thorium-227, thorium-228, thorium-230, thorium-232, neptunium-237, plutonium-238, plutonium-239 (together with plutonium- 240), americium-241, curium-244, californium-249 and californium-252). Radium, Plutonium, Americium, Curium, Californium

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: no data available
- Toxicity to daphnia and other aquatic invertebrates: no data available
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

12.2 Persistence and degradability

no data available

12.3 Bioaccumulative potential

Fish may take up americium, but little builds up in the fleshy tissue(1). BCF values for americium-241 measured for various fish at the Department of Energy's Savannah River Site, SC were reported in 1996 as follows: largemouth bass (muscle), 2,500; bullhead catfish (bone), 4,200. In a study performed at a nuclear waste pond at Hanford, WA, the maximum concentration of actinides, including americium-241, that would accumulate in the whole fish and fish fillet were measured. In this waste pond, the sediment concentration of americium-241 was about 5.5 Bq/g, approximately 3 orders of magnitude above background levels. Both the bluegill and largemouth bass were studied. The concentration of americium-241 in the water was about 7 uBq/mL. The results from the Hanford study indicate that both short- and long-term uptakes of americium were low; that uptake was similar for short-term (5 days) and long-term (430 days) experiments; and that direct sediment-to-fish transfer was the primary route for americium uptake. In both species of fish, there were only a few cases where fillet concentrations were >10 times those in controls. The maximum concentration of americium-241 obtained in bass and bluegill were 1.1 and 1.0 mBq/mL dry weight in fillet and 2.5 and 74 mBq/mL in whole fish(1).

12.4 Mobility in soil

Americium has been shown to be largely associated with the high molecular weight organic factions of dissolved organic matter in the soil solution of two grassland soils, a soddy podzolic soil and a peat soil, in the vicinity of the nuclear reactor at Chernobyl, Ukraine. The distribution coefficients for americium-241 in these soils were (soil type (depth), Kd in mL/g): soddy podzolic-sod layer (0 to 2 cm), 1,220; soddy podzolic-mineral layer (2 to 5 cm), 810; peat (0 to 2 cm), 2,760; and peat (2 to 5 cm), 4,550(1). While it was similarly shown that the concentration of americium-241 was 2 to 3 times higher in organic matter than in whole sediment from Lake Michigan, organic matter was a very minor constituent of the sediment (<0.5%), so organic matter was associated with a smaller percentage of americium despite its higher concentration. The bulk of the americium-241 in Lake Michigan was found in the hydrous oxides fraction of both the sediment core samples and the suspended particulate matter(1).

12.5 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

14.1 UN Number

ADR/RID: no data available IMDG: no data available IATA: no data available

14.2 UN Proper Shipping Name

ADR/RID: no data available IMDG: no data available IATA: no data available

14.3 Transport hazard class(es)

ADR/RID: no data available IMDG: no data available IATA: no data available

14.4 Packing group, if applicable

ADR/RID: no data available IMDG: no data available IATA: no data available

14.5 Environmental hazards

ADR/RID: No IMDG: No IATA: No

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
Americium	Americium	7440-35-9	231-144-4
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Not Listed.
New Zealand Inventory of Chemicals (NZIoC)			Not Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Not Listed.
Vietnam National Chemical Inventory			Not Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Not Listed.
Korea Existing Chemicals List (KECL)			Not Listed.

SECTION 16: Other information

Information on revision

Creation Date	July 15, 2019
Revision Date	July 15, 2019

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

References

- IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home
- HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm
- IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple
- ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg
- Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp
- ECHA - European Chemicals Agency, website: https://echa.europa.eu/