

WASTE STREAM	7A29	Uranium Contaminated Operations ILW
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SITE AWE Aldermaston

SITE OWNER Ministry of Defence (MOD)

WASTE CUSTODIAN AWE plc

WASTE TYPE ILW

WASTE VOLUMES

Stocks:
Future arisings:

	Reported (m ³)
At 1.4.2025	~ 133.7
1.4.2025 - 31.3.2027	= 0.8
1.4.2028 - 31.3.2030	= 2.8
1.4.2031 - 31.3.2033	= 12.3
1.4.2034 - 31.3.2036	= 0
1.4.2037 - 31.3.2039	= 2.0
1.4.2040 - 31.3.2042	= 17.0
1.4.2043 - 31.3.2080	

OR

Conditioned (m ³)	Packaged (m ³)

Total future arisings: **34.8**
Total waste volume: **168.5**

Number of waste packages in stock: At 1.4.2025..... - packages

Comment on arising rates: Increase to 2025 UK RWI inventory volume, owing to waste database management.

Future arisings have slightly decreased based on predicted waste of a single facility during POCO, waste estimations correct as of February 2025.

Additional information on quantities: Predicted volumes could vary depending on how much waste is produced prior to decommissioning.

Uncertainty factors on volumes: Stock (upper): x 1.00 Arisings (upper): x 5.00
Stock (lower): x 1.00 Arisings (lower): x 0.50

WASTE SOURCE Organic and inorganic solids arising from operations with highly enriched uranium and some wastes containing very large quantities of DU.

PHYSICAL CHARACTERISTICS

General description: The waste consists of solids arising from operations with highly enriched uranium and historical wastes containing very large quantities of DU. These wastes include tools, filters, glove-boxes components, discarded equipment.

Changes since waste generated: -

Bulk density (t/m³): ~ 0.31

Comment on density: This figure has been derived using stock data from 2025 (total stream mass divided by the total stream volume).

CHEMICAL COMPOSITION

General description and components (%wt): Halogenated plastics (27.5%), non-halogenated plastics (14.5%), rubber (2%), cellulose (40%), stainless steel (2%), other ferrous metal (4%), aluminium (2%), copper (2.4%), lead (1%), brass (1%), glass (1.6%), graphite (1%) and asbestos (1%).

Chemical state: Neutral

Sheet metal proportion / thickness: Steel in the form of box fittings, tools and fixtures. Lead in the form of shielding panels.

Metals and alloys (%wt):

	(%wt)	Type(s) / Grades(s) with proportions	% of total C14 activity
Stainless steel.....	= 2.0	-	
Other ferrous metals.....	= 4.0	-	
Iron.....	= 0	-	
Aluminium.....	= 2.0	-	
Beryllium.....	= 0	-	
Cobalt.....	= 0	-	
Copper.....	= 2.4	-	
Lead.....	= 1.0	-	
Magnox/Magnesium.....	= 0	-	
Nickel.....	= 0	-	
Titanium.....	= 0	-	
Uranium.....	= 0	-	
Zinc.....	= 0	-	
Zircaloy/Zirconium.....	= 0	-	
Other metals.....	= 1.0	Brass	

Organics (%wt):

	(%wt)	Type(s) and comment	% of total C14 activity
Total cellulotics.....	= 40.0	-	
Paper, cotton.....	= 32.5	-	
Wood.....	= 7.5	-	
Halogenated plastics.....	= 27.5	PVC and perspex	
Total non-halogenated plastics.....	= 14.5	-	
Condensation polymers.....	= 14.5	-	
Others.....	= 0	-	
Organic ion exchange materials.....	= 0	-	
Total rubber.....	= 2.0	-	
Halogenated rubber.....	= 1.0	-	
Non-halogenated rubber.....	= 1.0	-	
Hydrocarbons.....	= 0	-	
Oil or grease.....	= 0	-	
Fuel.....	= 0	-	
Asphalt/Tarmac (cont.coal tar).....	= 0	-	
Asphalt/Tarmac (no coal tar).....	= 0	-	
Bitumen.....	= 0	-	
Others.....	= 0	-	
Other organics.....	= 0	-	

Other materials (%wt):

	(%wt)	Type(s) and comment	% of total C14 activity
Inorganic ion exchange materials.....	= 0	-	
Inorganic sludges and flocs.....	= 0	-	
Soil.....	= 0	-	
Brick/Stone/Rubble.....	= 0	-	
Cementitious material.....	= 0	-	
Sand.....	= 0	-	
Glass/Ceramics.....	= 1.6	-	
Graphite.....	= 1.0	-	
Desiccants/Catalysts.....	= 0	-	
Asbestos.....	= 1.0	-	
Non/low friable.....	< 1.0	-	
Moderately friable.....	< 1.0	-	
Highly friable.....	< 1.0	-	
Free aqueous liquids.....	= 0	-	
Free non-aqueous liquids.....	= 0	-	
Powder/Ash.....	= 0	-	

COMPONENTS OF MATERIALS, WASTE PROPERTIES, MATERIALS NOT CONTRIBUTING TO MASS

Inorganic anions (%wt):

	(%wt)	Type(s) and comment
Fluoride.....	0	-
Chloride.....	0	-
Iodide.....	0	-
Cyanide.....	0	-
Carbonate.....	0	-
Nitrate.....	0	-
Nitrite.....	0	-
Phosphate.....	0	-
Sulphate.....	0	-
Sulphide.....	0	-

Materials of interest for waste acceptance criteria:

	(%wt)	Type(s) and comment
Combustible metals.....	= 0	-
Low flash point liquids.....	= 0	-
Explosive materials.....	= 0	-
Phosphorus.....	= 0	-
Hydrides.....	= 0	-
Biological etc. materials.....	= 0	-
Biodegradable materials.....	P	-
Putrescible wastes.....	= 0	-
Non-putrescible wastes.....	P	Paper, cotton and wood are present
Corrosive materials.....	= 0	-
Pyrophoric materials.....	= 0	-
Generating toxic gases.....	= 0	-
Reacting with water.....	= 0	-
Higher activity particles.....	= 0	-
Soluble solids as bulk chemical compounds.....	= 0	-

Hazardous substances / non hazardous pollutants:

-

	(%wt)	Type(s) and comment
Acrylamide.....	= 0	-
Benzene.....	= 0	-
Chlorinated solvents.....	= 0	-
Formaldehyde.....	= 0	-
Organometallics.....	= 0	-
Phenol.....	= 0	-
Styrene.....	= 0	-
Tri-butyl phosphate.....	= 0	-
Other organophosphates.....	= 0	-
Vinyl chloride.....	NE	PVC present
Arsenic.....	= 0	-
Barium.....	= 0	-
Boron.....	= 0	-
Boron (in Boral).....	= 0	-
Boron (non-Boral).....	= 0	-
Cadmium.....	= 0	-
Caesium.....	= 0	-
Selenium.....	= 0	-
Chromium.....	= 0	-
Molybdenum.....	= 0	-
Thallium.....	= 0	-
Tin.....	= 0	-
Vanadium.....	= 0	-
Mercury compounds.....	= 0	-
Others.....	= 0	-

Complexing agents (%wt):

No

	(%wt)	Type(s) and comment
EDTA.....	= 0	-
DPTA.....	= 0	-
NTA.....	= 0	-
Polycarboxylic acids.....	= 0	-
Other organic complexants.....	= 0	-
Total complexing agents.....	= 0	-

Physical components:

	Number	Type(s) and comment
Sources.....		-
Electronic & Electrical Equipment (EEE)		-
EEE Type 1.....		-
EEE Type 2.....		-
EEE Type 3.....		-
EEE Type 4.....		-
EEE Type 5.....		-

TREATMENT, PACKAGING AND DISPOSAL

Planned on-site / off-site treatment(s):

Treatment	On-site / Off-site	Stream volume %
Size reduction		
Decay storage		
Low force compaction		
Supercompaction (HFC)		
Incineration		
Drying/dewatering/liquid separation		
Tie down/fixatives/strippable coating/painting application		
Decontamination		
Metal treatment		
Recycling / reuse		
Thermal treatment, including vitrification		
Encapsulation		
Polymer encapsulation		
Other physical treatment		
Other chemical treatment		
Containerisation		
Treatment not yet determined	Off-site	~ 50.0
None	Off-site	~ 50.0

Comments on planned treatments:

Waste stream 7A29 projected to be consigned to the GDF. This is an estimation only, calculation not based on any existing data.

Conditioning method:

-

Conditioning plants:

Plant Name	Location

Likely conditioning matrix:

-

Further information on the conditioning matrix:

-

Waste Packaging:

Likely container type:

Container	Waste packaged (vol%)	Waste loading (m³)	Payload (m³)	Number of packages	Estimated start date for packaging
500 l drum	100.0	1.0	0.50	169	-

Range in container waste loading:

The loading is an estimate based on experience with similar waste at Sellafield and learning from the early part of the AWE / Sellafield Transfer Programme.

Other information on packaging and conditioning:

Waste is expected to be treated and packaged under the Sellafield WTC1a Final LoC.

Conditioned density (t/m³):

~ 2.0

Conditioned density comment:

The conditioned density is an estimate which is subject to change.

Management Routes:

Disposal Route	Stream volume %	Raw density t/m³	Start date
Expected to be consigned to a Near Site, Near Surface Disposal Facility (Scotland)	~ 100.0		
Expected to be Non-NSD HAW managed under Scottish Government's policy			
Expected to be disposed to LLW Vaults NRS Dounreay			
Expected to be consigned to the Geological Disposal Facility			
Expected to be consigned to a Near Surface Disposal Facility			
Expected to be consigned to the LLW Repository			
Expected to be consigned to a Landfill Facility			
Expected to be disposed On-Site			
Expected to be managed by In-Situ Disposal			
Expected to be consigned to an Incineration Facility			
Expected to be consigned to a Metal Treatment Facility			
Expected to be Out of Scope			
Expected to be recycled / reused			
Disposal route not known			

Classification codes for waste expected to be consigned to a landfill facility:

Opportunities for alternative disposal routing: Not yet determined

Baseline Management Route	Opportunity Management Route	Stream volume (%)	Opportunity Confidence	Comment
-	-	-	-	-

RADIOACTIVITY

Source: Operations and processes involving the use of uranium.

Uncertainty: Current stock and future arisings cannot be stated for classification reasons.

Measurement of radioactivities: Fingerprints used with non-destructive assay techniques, i.e. low resolution gamma-ray spectroscopy.

Chemical form of radionuclides:

- H-3: Not present in Waste Stream
- C-14: Not present in Waste Stream
- Cl-36: Not present in Waste Stream
- Se-79: Not present in Waste Stream
- Tc-99: Not present in Waste Stream
- I-129: Not present in Waste Stream
- Ra: Only daughter products present from uranium in this waste stream. Oxide form.
- Th: Only daughter products present from uranium in this waste stream. Oxide form.
- U: Present in Waste Stream as oxide form
- Np: Not present in Waste Stream
- Pu: Not present in Waste Stream

WASTE STREAM		7A29		Uranium Contaminated Operations ILW					
Nuclide	Mean radioactivity, TBq/m³				Nuclide	Mean radioactivity, TBq/m³			
	Waste at 1.4.2025	Bands and Code	Future Arisings	Bands and Code		Waste at 1.4.2025	Bands and Code	Future Arisings	Bands and Code
H 3					Gd 153				
Be 10					Ho 163				
C 14					Ho 166m				
Na 22					Tm 170				
Al 26					Tm 171				
Cl 36					Lu 174				
Ar 39					Lu 176				
Ar 42					Hf 178n				
K 40					Hf 182				
Ca 41					Pt 193				
Mn 53					Tl 204				
Mn 54					Pb 205				
Fe 55					Pb 210		6		
Co 60					Bi 208				
Ni 59					Bi 210m				
Ni 63					Po 210		6		
Zn 65					Ra 223		6		
Se 79					Ra 225				
Kr 81					Ra 226		6		
Kr 85					Ra 228		6		
Rb 87					Ac 227		6		
Sr 90					Th 227		6		
Zr 93					Th 228		6		
Nb 91					Th 229				
Nb 92					Th 230		6		
Nb 93m					Th 232		6		
Nb 94					Th 234		6		
Mo 93					Pa 231		6		
Tc 97					Pa 233				
Tc 99					U 232				
Ru 106					U 233		6		6
Pd 107					U 234		7		7
Ag 108m					U 235		7		7
Ag 110m					U 236		7		7
Cd 109					U 238		7		7
Cd 113m					Np 237				
Sn 119m					Pu 236				
Sn 121m					Pu 238				
Sn 123					Pu 239				
Sn 126					Pu 240				
Sb 125					Pu 241				
Sb 126					Pu 242				
Te 125m					Am 241				
Te 127m					Am 242m				
I 129					Am 243				
Cs 134					Cm 242				
Cs 135					Cm 243				
Cs 137					Cm 244				
Ba 133					Cm 245				
La 137					Cm 246				
La 138					Cm 248				
Ce 144					Cf 249				
Pm 145					Cf 250				
Pm 147					Cf 251				
Sm 147					Cf 252				
Sm 151					Unsp a				
Eu 152					Unsp b/g				
Eu 154					Total a	0	*	0	*
Eu 155					Total b/g	0	*	0	*

Bands (Upper and Lower)

A a factor of 1.5
B a factor of 3
C a factor of 10
D a factor of 100
E a factor of 1000

Note: Bands quantify uncertainty in the mean radioactivity.

Code

1 Measured activity
2 Derived activity (best estimate)
3 Derived activity (upper limit)
4 Not present
5 Present but not significant
6 Likely to be present but not assessed
7 Present in significant quantities but not determined
8 Not expected to be present in significant quantity
* Total calculated from the 114 declared radionuclides