

WASTE STREAM	9D925	Ponds & Magnox Vault ILW Scabblings
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SITE Hinkley Point A

SITE OWNER Nuclear Decommissioning Authority

WASTE CUSTODIAN Nuclear Restoration Services Ltd (NRS)

WASTE TYPE ILW

WASTE VOLUMES

	Reported (m ³)	OR	Conditioned (m ³)	Packaged (m ³)
Stocks:	At 1.4.2025	= 2.8		
Future arisings:				
Total future arisings:		0.0		
Total waste volume:		2.8		

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

Comment on arising rates: -

Additional information on quantities: Following the completion of the ponds decontamination project a total of 2.75m³ of concrete shavings has been produced and is now a stock contained in 11 drums in the NCAW. Under the current LTP strategy no further ILW shavings are planned to be generated, therefore future arisings will be 0m³.

Uncertainty factors on volumes: Stock (upper): x 1.10 Arisings (upper): x -
Stock (lower): x 0.90 Arisings (lower): x -

WASTE SOURCE Concrete wastes from scabbling of fuel ponds and Magnox vault walls & floor. The waste stream includes both ponds, both Magnox Wet Vaults and both Splitter Vane Vaults. The scabbling technique removed both the surface coating (paint) and a thickness of underlying concrete. The wall thickness removed was ~5 mm.

PHYSICAL CHARACTERISTICS

General description: Concrete that has been in contact with fuel pond water, with items held in the pond and in the Magnox Vaults (both wet and dry). There are no large items.

Changes since waste generated: -

Bulk density (t/m³): ~ 1.5

Comment on density: The density is of the waste as prepared for packaging.

CHEMICAL COMPOSITION

General description and components (%wt): Concrete (~99%), paint (~1%).

Chemical state: Alkali

Sheet metal proportion / thickness: There are no metal items.

Metals and alloys (%wt):

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

Organics (%wt):

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

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.....	~ 99.0	-	
Sand.....		-	
Glass/Ceramics.....	= 0	-	
Graphite.....	= 0	-	
Desiccants/Catalysts.....		-	
Asbestos.....	= 0	-	
Non/low friable.....		-	
Moderately friable.....		-	
Highly friable.....		-	
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.....	NE	-
Chloride.....	NE	-
Iodide.....	NE	-
Cyanide.....	= 0	-
Carbonate.....	NE	-
Nitrate.....	NE	-
Nitrite.....	NE	-
Phosphate.....	NE	-
Sulphate.....	NE	-
Sulphide.....	NE	-

Materials of interest for waste acceptance criteria:

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

Hazardous substances / non hazardous pollutants:

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

Complexing agents (%wt):

No		
	(%wt)	Type(s) and comment
EDTA.....	= 0	-
DPTA.....		-
NTA.....		-
Polycarboxylic acids.....		-
Other organic complexants.....		-
Total complexing agents.....		-

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 None	On-site	100.0

Comments on planned treatments:

-

Conditioning method:

Gravel and particulate conditioning plant (PCF or tumble mix TBC).

Conditioning plants:

Plant Name	Location
HPA MILWEP	Hinkley Point A

Likely conditioning matrix:

Unknown

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
	6 m³ concrete box (SD)	100.0	2.8	5.8	1	-

Range in container waste loading: -

Other information on packaging and conditioning: -

Conditioned density (t/m³): -

Conditioned density comment: -

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: No

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

RADIOACTIVITY

Source: Contamination of paint and concrete from walls and floors in the fuel ponds. Activity estimates are as shown in the table.

Uncertainty: The values quoted were derived by calculation and are indicative of the activities that are expected - activities have been extrapolated from waste stream 9D918 and multiplied by a factor of 10. More accurate data will be applied once physical characterisation of this waste stream has taken place.

Measurement of radioactivities: The specific activities have been estimated from waste stream fingerprint normalised to measurements of the Cs137 activity.

Chemical form of radionuclides: H-3: Any tritium is expected to be present as water, but some may be in the form of other inorganic compounds or as organic compounds.
C-14: Chemical form of carbon 14 has not been determined but may be graphite.
Cl-36: The chemical form of chlorine 36 has not been determined.
Se-79: The selenium content is insignificant.
Tc-99: The technetium content is insignificant.
I-129: -
Ra: Radium isotope content is insignificant.
Th: The thorium content is insignificant.
U: Chemical form of uranium has not been determined but may be uranium oxides.
Np: The neptunium content is insignificant.
Pu: Chemical form of plutonium has not been determined but may be plutonium oxides.

WASTE STREAM 9D925 Ponds & Magnox Vault ILW Scabblings									
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	4.56E-06	B C 2			Gd 153			8	
Be 10					Ho 163			8	
C 14	6.99E-06	B C 2			Ho 166m			8	
Na 22					Tm 170			8	
Al 26					Tm 171			8	
Cl 36	2.00E-05	B C 2			Lu 174			8	
Ar 39					Lu 176			8	
Ar 42					Hf 178n			8	
K 40					Hf 182			8	
Ca 41					Pt 193			8	
Mn 53					Ti 204			8	
Mn 54					Pb 205			8	
Fe 55	1.59E-06	B C 2			Pb 210			8	
Co 60	1.08E-06	B C 2			Bi 208			8	
Ni 59					Bi 210m			8	
Ni 63	6.53E-06	B C 2			Po 210			8	
Zn 65					Ra 223			8	
Se 79					Ra 225			8	
Kr 81					Ra 226			8	
Kr 85					Ra 228			8	
Rb 87					Ac 227			8	
Sr 90	5.51E-03	B C 2			Th 227			8	
Zr 93					Th 228			8	
Nb 91					Th 229			8	
Nb 92					Th 230			8	
Nb 93m					Th 232			8	
Nb 94					Th 234			8	
Mo 93					Pa 231			8	
Tc 97					Pa 233			8	
Tc 99					U 232			8	
Ru 106					U 233			8	
Pd 107					U 234			8	
Ag 108m					U 235			8	
Ag 110m					U 236			8	
Cd 109					U 238			6	
Cd 113m					Np 237			8	
Sn 119m					Pu 236			8	
Sn 121m					Pu 238	6.47E-05	B C 2		
Sn 123					Pu 239	1.00E-04	B C 2		
Sn 126					Pu 240	9.99E-05	B C 2		
Sb 125					Pu 241	1.24E-03	B C 2		
Sb 126					Pu 242			8	
Te 125m					Am 241	4.49E-05	B C 2		
Te 127m					Am 242m			8	
I 129					Am 243			8	
Cs 134	2.44E-07	B C 2			Cm 242			8	
Cs 135					Cm 243			8	
Cs 137	2.38E-02	B C 2			Cm 244			8	
Ba 133					Cm 245			8	
La 137					Cm 246			8	
La 138					Cm 248			8	
Ce 144					Cf 249			8	
Pm 145					Cf 250			8	
Pm 147					Cf 251			8	
Sm 147					Cf 252			8	
Sm 151					Unsp a				
Eu 152					Unsp b/g				
Eu 154	4.47E-06	B C 2			Total a	3.10E-04	*	0	*
Eu 155	2.40E-06	B C 2			Total b/g	3.06E-02	*	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