

WASTE STREAM	9D921	Sludge Canning Building Plant Items
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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	= 1.0		
Future arisings:	1.4.2025 - 31.3.2027	5.2		
Total future arisings:		5.2		
Total waste volume:		6.2		

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

Comment on arising rates: -

Additional information on quantities: -

Uncertainty factors on volumes:

Stock (upper):	x 1.20	Arisings (upper):	x 1.20
Stock (lower):	x 0.80	Arisings (lower):	x 0.90

WASTE SOURCE The waste will consist of solid waste generated from the de-planting of the Sludge Canning Building that cannot be decontaminated down to LLW levels. Principally, this waste contains the Lamella Thickener, Sludge Canning Cell Drain and Sludge Canning Unit Metering Pump.

PHYSICAL CHARACTERISTICS

General description: The three principal items are: the Lamella Thickener (388 kg), Sludge Canning Cell Drain (8.5 kg per m) and Sludge Canning Unit Metering Pump (60 kg).

Changes since waste generated: -

Bulk density (t/m³): ~ 1.0

Comment on density: The assumption of the bulk density at 1 t/m³ may be subject to revision.

CHEMICAL COMPOSITION

General description and components (%wt): Principally ferrous metals (~95%) and stainless steel (~5%).

Chemical state: Neutral

Sheet metal proportion / thickness: The Sludge Canning Cell Drain is stainless steel (~3mm thick) with a mass of 8.5 kg per m. The Lamella Thickener (388 kg) is a large box with stainless steel ~6mm thick. The Sludge Canning Unit Metering Pump (60 kg) is a large item.

Metals and alloys (%wt):

	(%wt)	Type(s) / Grades(s) with proportions	% of total C14 activity
Stainless steel.....	~ 5.0	Not yet determined.	
Other ferrous metals.....	~ 95.0	Not yet determined.	
Iron.....	-	-	
Aluminium.....	NE	-	
Beryllium.....	0	-	
Cobalt.....	-	-	
Copper.....	NE	-	
Lead.....	NE	-	
Magnox/Magnesium.....	= 0	-	
Nickel.....	-	-	
Titanium.....	-	-	
Uranium.....	NE	-	
Zinc.....	NE	-	
Zircaloy/Zirconium.....	NE	-	
Other metals.....	NE	-	

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.....	= 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.....		-	
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.....	= 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.....	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:

Direct grout encapsulation of solids into 200 litre drums, grout 16 drums into RCB.

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	6.2	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 steel pipework, vessels and concrete structure. Activity estimates are as shown in the table.

Uncertainty: The values quoted were derived by measurement and calculation, and are indicative of the activities that are expected.

Measurement of radioactivities: -

Chemical form of radionuclides:

- H-3: -
- C-14: -
- Cl-36: The chlorine 36 content is insignificant.
- Se-79: -
- Tc-99: -
- I-129: -
- Ra: -
- Th: -
- U: -
- Np: -
- Pu: -

WASTE STREAM 9D921 Sludge Canning Building Plant Items									
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	1.62E-06	C C 2	1.62E-06	C C 2	Gd 153		8		8
Be 10		8		8	Ho 163		8		8
C 14	3.00E-06	C C 2	3.00E-06	C C 2	Ho 166m		8		8
Na 22		8		8	Tm 170		8		8
Al 26		8		8	Tm 171		8		8
Cl 36	< 6.00E-04	C 3	< 6.00E-04	C 3	Lu 174		8		8
Ar 39		8		8	Lu 176		8		8
Ar 42		8		8	Hf 178n		8		8
K 40		8		8	Hf 182		8		8
Ca 41		8		8	Pt 193		8		8
Mn 53		8		8	Ti 204		8		8
Mn 54		8		8	Pb 205		8		8
Fe 55	< 6.14E-08	C 3	< 6.14E-08	C 3	Pb 210		8		8
Co 60	2.36E-07	C C 2	2.36E-07	C C 2	Bi 208		8		8
Ni 59		8		8	Bi 210m		8		8
Ni 63	3.70E-06	C C 2	3.70E-06	C C 2	Po 210		8		8
Zn 65		8		8	Ra 223		8		8
Se 79		8		8	Ra 225		8		8
Kr 81		8		8	Ra 226		8		8
Kr 85		8		8	Ra 228		8		8
Rb 87		8		8	Ac 227		8		8
Sr 90	2.31E-03	C C 2	2.31E-03	C C 2	Th 227		8		8
Zr 93		8		8	Th 228	3.61E-08	C C 2	3.61E-08	C C 2
Nb 91		8		8	Th 229		8		8
Nb 92		8		8	Th 230		8		8
Nb 93m		8		8	Th 232		8		8
Nb 94		8		8	Th 234	6.00E-07	C C 2	6.00E-07	C C 2
Mo 93		8		8	Pa 231		8		8
Tc 97		8		8	Pa 233	9.78E-09	C C 2	9.78E-09	C C 2
Tc 99		8		8	U 232	< 3.59E-08	C 3	< 3.59E-08	C 3
Ru 106		8		8	U 233	< 1.00E-06	C 3	< 1.00E-06	C 3
Pd 107		8		8	U 234	9.12E-07	C C 2	9.12E-07	C C 2
Ag 108m		8		8	U 235	3.00E-08	C C 2	3.00E-08	C C 2
Ag 110m		8		8	U 236	6.03E-08	C C 2	6.03E-08	C C 2
Cd 109		8		8	U 238	6.00E-07	C C 2	6.00E-07	C C 2
Cd 113m		8		8	Np 237	9.88E-09	C C 2	9.88E-09	C C 2
Sn 119m		8		8	Pu 236		8		8
Sn 121m		8		8	Pu 238	3.67E-04	C C 2	3.67E-04	C C 2
Sn 123		8		8	Pu 239	1.00E-03	C C 2	1.00E-03	C C 2
Sn 126		8		8	Pu 240	9.99E-04	C C 2	9.99E-04	C C 2
Sb 125		8		8	Pu 241	5.89E-03	C C 2	5.89E-03	C C 2
Sb 126		8		8	Pu 242	< 8.00E-06	C 3	< 8.00E-06	C 3
Te 125m		8		8	Am 241	3.08E-03	C C 2	3.08E-03	C C 2
Te 127m		8		8	Am 242m		8		8
I 129	< 5.00E-06	C 3	< 5.00E-06	C 3	Am 243		8		8
Cs 134		8		8	Cm 242		8		8
Cs 135		8		8	Cm 243	1.55E-05	C C 2	1.55E-05	C C 2
Cs 137	6.99E-04	C C 2	6.99E-04	C C 2	Cm 244		8		8
Ba 133		8		8	Cm 245		8		8
La 137		8		8	Cm 246		8		8
La 138		8		8	Cm 248		8		8
Ce 144		8		8	Cf 249		8		8
Pm 145		8		8	Cf 250		8		8
Pm 147	1.10E-06	C C 2	1.10E-06	C C 2	Cf 251		8		8
Sm 147		8		8	Cf 252		8		8
Sm 151		8		8	Unsp a				
Eu 152		8		8	Unsp b/g				
Eu 154	2.06E-05	C C 2	2.06E-05	C C 2	Total a	5.47E-03	*	5.47E-03	*
Eu 155	2.08E-06	C C 2	2.08E-06	C C 2	Total b/g	9.53E-03	*	9.53E-03	*

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