

WASTE STREAM	9D15	Grouted PWTP Fine Filters
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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			
Future arisings:				
Total future arisings:				
Total waste volume:				

Total future arisings: 0.0

Total waste volume: 5.8

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

Comment on arising rates: The site is now being decommissioned so there will be no further arisings in this operational stream.

Additional information on quantities: This waste has been reclassified to ILW from LLW as does not meet LLWR WAC

Uncertainty factors on volumes: Stock (upper): x 1.10 Arisings (upper): x -
Stock (lower): x 0.50 Arisings (lower): x -

WASTE SOURCE Cartridge filter elements from filtration of process liquors.

PHYSICAL CHARACTERISTICS

General description: Cartridge filter elements in 240 litre drums; 3 to 6 filters per drum. The filters were grouted for disposal as LLW but subsequently found to not meet LLWR WAC. There are no large items to influence the choice of treatment process or disposal container.

Changes since waste generated: -

Bulk density (t/m³): = 2.0

Comment on density: Density of conditioned filters as contained in 240 litre drums. 3 to 6 filters per drum.

CHEMICAL COMPOSITION

General description and components (%wt): Fibreglass (~1% wt), plastic (~0.02% wt), stainless steel (~0.02% wt), rubber (<0.01% wt), 3:1 PFA/OPC grout (~81% wt), steel frame (~10% wt) and drums (~5% wt).

Chemical state: Neutral

Sheet metal proportion / thickness: There are no bulk metal items present. There is the sheet metal of the drums containing the waste which have walls about 1 mm thick. There is also a steel in-drum frame.

Metals and alloys (%wt):

	(%wt)	Type(s) / Grades(s) with proportions	% of total C14 activity
Stainless steel.....	~ 0.02	-	
Other ferrous metals.....	= 15.0	-	
Iron.....		-	
Aluminium.....	= 0	-	
Beryllium.....	0	-	
Cobalt.....		-	
Copper.....	= 0	-	
Lead.....	= 0	-	
Magnox/Magnesium.....	= 0	-	
Nickel.....		-	
Titanium.....		-	
Uranium.....		-	
Zinc.....	= 0	-	
Zircaloy/Zirconium.....	= 0	-	
Other metals.....	= 0	-	

Organics (%wt):

	(%wt)	Type(s) and comment	% of total C14 activity
Total cellulosics.....	= 0	-	Rubbers will be present in small quantities. It is not determined whether they are halogenated.
Paper, cotton.....	= 0	-	
Wood.....	= 0	-	
Halogenated plastics.....	= 0	-	
Total non-halogenated plastics.....	~ 0.02	-	
Condensation polymers.....	~ 0.02	-	
Others.....	= 0	-	
Organic ion exchange materials.....	TR	-	
Total rubber.....	< 0.01	-	
Halogenated rubber.....	< 0.01	-	
Non-halogenated rubber.....	NE	-	
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...	TR	-	
Inorganic sludges and flocs...	= 0	-	
Soil...	= 0	-	
Brick/Stone/Rubble...	= 0	-	
Cementitious material...	= 81.0	-	
Sand...	-	-	
Glass/Ceramics...	~ 1.0	-	
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...	TR	-
Chloride...	TR	-
Iodide...	TR	-
Cyanide...	= 0	-
Carbonate...	TR	-
Nitrate...	TR	-
Nitrite...	TR	-
Phosphate...	TR	-
Sulphate...	TR	-
Sulphide...	TR	-

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):

Not yet determined		
	(%wt)	Type(s) and comment
EDTA.....	NE	-
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:

Assumption is that up to 8 drums will be encapsulated per 6m3 Concrete box as per other MCI streams.

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	1.9	5.8	3	-

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: Activity source is fission products, activation products and actinides.
The activities refer to conditioned waste assuming 6 filters per drum. Other similar wastes (not encapsulated) too active to be LLW are described in waste stream 9D17.

Uncertainty: The values quoted are indicative of the activities that are expected.

Measurement of radioactivities: The specific activities have been estimated from measurement of the drum activity and decayed.

Chemical form of radionuclides:

- H-3: The chemical form of tritium is probably water.
- C-14: The chemical form of carbon 14 may be graphite.
- Cl-36: The chemical form of chlorine 36 may be chloride.
- Se-79: The selenium content is insignificant.
- Tc-99: The technetium content is insignificant.
- I-129: -
- Ra: The radium isotope content is insignificant.
- Th: The thorium content is insignificant.
- U: The uranium content is insignificant.
- Np: The neptunium content is insignificant.
- Pu: The chemical form of plutonium isotopes may be oxides.

WASTE STREAM			9D15		Grouted PWTP Fine Filters				
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	8.29E-05	C C 2			Gd 153		8		
Be 10					Ho 163		8		
C 14	6.00E-05	C C 2			Ho 166m		8		
Na 22					Tm 170		8		
Al 26					Tm 171		8		
Cl 36					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					Tl 204		8		
Mn 54					Pb 205		8		
Fe 55	3.85E-07	C C 2			Pb 210		8		
Co 60	1.73E-05	C C 2			Bi 208		8		
Ni 59					Bi 210m		8		
Ni 63	8.97E-05	C 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	2.44E-04	C 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	4.76E-07	C C 2			Th 234	6.95E-08	C C 2		
Mo 93					Pa 231		8		
Tc 97					Pa 233		8		
Tc 99	4.38E-06	C C 2			U 232		8		
Ru 106					U 233		8		
Pd 107					U 234	6.16E-08	C C 2		
Ag 108m					U 235	1.86E-09	C C 2		
Ag 110m					U 236	7.43E-09	C C 2		
Cd 109					U 238	6.95E-08	C C 2		
Cd 113m					Np 237		8		
Sn 119m					Pu 236		8		
Sn 121m					Pu 238	1.43E-05	C C 2		
Sn 123					Pu 239	1.88E-05	C C 2		
Sn 126					Pu 240	1.88E-05	C C 2		
Sb 125					Pu 241	2.75E-04	C C 2		
Sb 126					Pu 242		8		
Te 125m					Am 241	9.89E-05	C C 2		
Te 127m					Am 242m		8		
I 129					Am 243		8		
Cs 134	2.56E-08	C C 2			Cm 242		8		
Cs 135					Cm 243	1.32E-08	C C 2		
Cs 137	3.76E-04	C C 2			Cm 244	8.04E-07	C C 2		
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	1.20E-07	C C 2			Cf 251		8		
Sm 147					Cf 252		8		
Sm 151	7.46E-06	C C 2			Unsp a				
Eu 152	6.03E-08	C C 2			Unsp b/g				
Eu 154	2.76E-06	C C 2			Total a	1.52E-04	*	0	*
Eu 155	3.49E-07	C C 2			Total b/g	1.16E-03	*	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