

WASTE STREAM	9D17	PWTP Fine Filters (ILW)
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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 = 7.4			
Future arisings:	1.4.2025 - 31.3.2026 1.0			
Total future arisings:	1.0			
Total waste volume:	8.4			

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

Comment on arising rates: -

Additional information on quantities: Value for stocks inferred from number of ILW Fine Filters identified during 2020-21 segregation campaign (492) and assuming volume of each filter is ~15 litres. Volume of future arisings is indicative figure only.

Uncertainty factors on volumes:

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

WASTE SOURCE Cartridge filter elements from filtration of process liquors.

PHYSICAL CHARACTERISTICS

General description: Cartridge filter elements ~85 cm long, ~15 cm OD and ~9.5 cm ID. Principal construction material filter media is fibreglass held in a steel frame. Unused filter weight is ~2 kg. Typical weight after use, including retaining water and radioactive particulate is ~5kg. Stored in mild steel drums.

Changes since waste generated: -

Bulk density (t/m³): = 0.30

Comment on density: The bulk density of a wet drained filter is about 0.32 t/m³.

CHEMICAL COMPOSITION

General description and components (%wt): Fibreglass (~21% wt), plastic (<0.5% wt), stainless steel (<0.5% wt), rubber (~0.1% wt), steel frame (~50 wt), drum (~26% wt), cotton (2%)

Chemical state: Neutral

Sheet metal proportion / thickness: 26% of the waste is 200 litre mild steel drums with a typical wall thickness of 1-2 mm.

Metals and alloys (%wt):

	(%wt)	Type(s) / Grades(s) with proportions	% of total C14 activity
Stainless steel.....	~ 0.50	Nickel and chromium present in stainless steel.	
Other ferrous metals.....	= 76.0	-	
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 cellulose.....	= 2.0	-	
Paper, cotton.....	= 2.0	-	
Wood.....	= 0	-	
Halogenated plastics.....	= 0	-	
Total non-halogenated plastics.....	< 0.50	-	
Condensation polymers.....	< 0.50	-	
Others.....	= 0	-	
Organic ion exchange materials.....	TR	-	
Total rubber.....	~ 0.10	-	
Halogenated rubber.....	~ 0.10	-	
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.....	= 0	-	
Sand.....		-	
Glass/Ceramics.....	= 21.0	fibre glass	
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.....	NE	-
Iodide.....	TR	-
Cyanide.....	= 0	-
Carbonate.....	TR	-
Nitrate.....	TR	-
Nitrite.....	TR	-
Phosphate.....	TR	-
Sulphate.....	NE	-
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):

Yes		
	(%wt)	Type(s) and comment
EDTA.....	TR	-
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:

-

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	1.5	5.8	6	-

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: Yes

Baseline Management Route	Opportunity Management Route	Stream volume (%)	Opportunity Confidence	Comment
GDF	LLWR	-	GREEN	This waste could be disposed of to LLW disposal or treatment routes should it meet the WAC at time of disposal in order to divert from GDF

RADIOACTIVITY

Source: Activity source is fission products, activation products and actinides.

Uncertainty: Specific activity is a function of operating history. The values quoted are indicative of the activities that may be expected.

Measurement of radioactivities: -

Chemical form of radionuclides:

- H-3: Most tritium is expected to be present as 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 isotope content is insignificant.
- U: Chemical form of uranium isotopes may be uranium oxides.
- Np: The chemical form of neptunium has not been determined.
- Pu: Chemical form of plutonium isotopes may be plutonium oxides.

WASTE STREAM 9D17 PWTP Fine Filters (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	3.59E-04	C C 2	3.59E-04	C C 2	Gd 153		8		8
Be 10		8		8	Ho 163		8		8
C 14	2.60E-04	C C 2	2.60E-04	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		8		8	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	< 1.67E-06	C 3	< 1.67E-06	C 3	Pb 210		8		8
Co 60	7.48E-05	C C 2	7.48E-05	C C 2	Bi 208		8		8
Ni 59		8		8	Bi 210m		8		8
Ni 63	3.89E-04	C C 2	3.89E-04	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	3.12E-03	C C 2	3.12E-03	C C 2	Th 227		8		8
Zr 93		8		8	Th 228		8		8
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	8.87E-07	C C 2	8.87E-07	C C 2
Mo 93		8		8	Pa 231		8		8
Tc 97		8		8	Pa 233	1.18E-09	C C 2	1.18E-09	C C 2
Tc 99	5.59E-05	C C 2	5.59E-05	C C 2	U 232		8		8
Ru 106		8		8	U 233		8		8
Pd 107		8		8	U 234	7.86E-07	C C 2	7.86E-07	C C 2
Ag 108m		8		8	U 235	2.37E-08	C C 2	2.37E-08	C C 2
Ag 110m		8		8	U 236	9.48E-08	C C 2	9.48E-08	C C 2
Cd 109		8		8	U 238	8.87E-07	C C 2	8.87E-07	C C 2
Cd 113m		8		8	Np 237	1.22E-09	C C 2	1.22E-09	C C 2
Sn 119m		8		8	Pu 236		8		8
Sn 121m		8		8	Pu 238	1.83E-04	C C 2	1.83E-04	C C 2
Sn 123		8		8	Pu 239	2.40E-04	C C 2	2.40E-04	C C 2
Sn 126		8		8	Pu 240	2.40E-04	C C 2	2.40E-04	C C 2
Sb 125		8		8	Pu 241	3.51E-03	C C 2	3.51E-03	C C 2
Sb 126		8		8	Pu 242		8		8
Te 125m		8		8	Am 241	1.26E-03	C C 2	1.26E-03	C C 2
Te 127m		8		8	Am 242m		8		8
I 129		8		8	Am 243		8		8
Cs 134	3.27E-07	C C 2	3.27E-07	C C 2	Cm 242		8		8
Cs 135		8		8	Cm 243	1.68E-07	C C 2	1.68E-07	C C 2
Cs 137	4.80E-03	C C 2	4.80E-03	C C 2	Cm 244	1.03E-05	C C 2	1.03E-05	C C 2
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	1.53E-06	C C 2	1.53E-06	C C 2	Cf 251		8		8
Sm 147		8		8	Cf 252		8		8
Sm 151	9.52E-05	C C 2	9.52E-05	C C 2	Unsp a				
Eu 152		8		8	Unsp b/g				
Eu 154	1.30E-04	C C 2	1.30E-04	C C 2	Total a	1.94E-03	*	1.94E-03	*
Eu 155	1.63E-05	C C 2	1.63E-05	C C 2	Total b/g	1.28E-02	*	1.28E-02	*

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