

WASTE STREAM	9F18	Miscellaneous Drummed Contaminated and Activated Items
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SITE Sizewell 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	= 90.0		
Future arisings:				
Total future arisings:		0.0		
Total waste volume:		90.0		

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

Comment on arising rates: -

Additional information on quantities: Station operation ended on December 31 2006. Almost all waste is expected to decay to LLW during the Deferral period.

Uncertainty factors on volumes:

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

WASTE SOURCE The waste is redundant equipment and material usually arising from reactor operation, irradiated fuel handling and pond operations.

PHYSICAL CHARACTERISTICS

General description: The majority of drummed waste is contained in 120 litre drums with a small percentage in 200 litre drums. There are no large items. Special handling requirements have not been assessed.

Changes since waste generated: -

Bulk density (t/m³): = 0.40

Comment on density: The bulk density of the waste ranges from 0.2 t/m³ to 0.5 t/m³.

CHEMICAL COMPOSITION

General description and components (%wt): A mixture of non-combustible materials in 120-litre and 200-litre steel drums. All of the waste is non-combustible.

Chemical state: Neutral

Sheet metal proportion / thickness: Metal is present as 120-litre and 200-litre mild steel drums of thickness ~1 mm.

Metals and alloys (%wt):

	(%wt)	Type(s) / Grades(s) with proportions	% of total C14 activity
Stainless steel.....	~ 3.0	300 series stainless steels.	
Other ferrous metals.....	~ 90.0	Generally carbon steels.	
Iron.....	-	-	
Aluminium.....	< 0.10	-	
Beryllium.....	0	-	
Cobalt.....	-	-	
Copper.....	< 0.10	-	
Lead.....	< 0.10	-	
Magnox/Magnesium.....	TR	Trace amounts of Magnox possible due to contamination with fuel.	
Nickel.....	P	Chromium will be present as constituent of stainless steel.	
Titanium.....	-	-	
Uranium.....	-	-	
Zinc.....	= 0	-	
Zircaloy/Zirconium.....	= 0	-	
Other metals.....	P	Nickel will be present as constituent of stainless steel. There are no "other" metals present.	

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.....	TR	-	
Condensation polymers.....	= 0	-	
Others.....	TR	-	
Organic ion exchange materials.....	= 0	-	
Total rubber.....	< 0.10	-	
Halogenated rubber.....	< 0.10	viton and neoprene.	
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.....	~ 5.0	-	
Sand.....	-	-	
Glass/Ceramics.....	< 0.10	-	
Graphite.....	= 0	-	
Desiccants/Catalysts.....	-	-	
Asbestos.....	= 0	-	
Non/low friable.....	-	-	
Moderately friable.....	-	-	
Highly friable.....	-	-	
Free aqueous liquids.....	= 0	-	
Free non-aqueous liquids.....	TR	-	
Powder/Ash.....	NE	-	

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.....	TR	-
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		= 100.0

Comments on planned treatments:

There may be an opportunity to segregate the waste for metal recycling and decontamination.

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
	1/2 Height IP-2 Disposal/Re-usable ISO (TC01/TC02)	100.0	10.0	18.3	9	-

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	0.40	2060
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
LLWR	Metal treatment facility	100.0	AMBER	There may be an opportunity to segregate the waste for metal recycling and decontamination at time of retrieval - currently assumed to be during RDC.

RADIOACTIVITY

Source: Non-combustible wastes. Components that have been associated with fuel route operations are likely to be of high activity. Components will have become either contaminated or activated in use. Specific activity is a function of Station operating history. Figures were derived by estimation based upon available information. Stock activity decayed to 01-04-2025.

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

Measurement of radioactivities: Activities have been calculated with assumptions of activation and contamination.

Chemical form of radionuclides:

H-3: The chemical form of tritium may be water or other inorganic or organic compounds.
C-14: The chemical form of carbon 14 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: The radium isotope content is insignificant.
Th: The thorium isotope content is insignificant.
U: The chemical form of uranium isotopes has not been determined but may be uranium oxides.
Np: The neptunium content is insignificant.
Pu: The chemical form of plutonium isotopes has not been determined but may be plutonium oxides.

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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	2.55E-04	C C 2			Gd 153		8		
Be 10					Ho 163		8		
C 14	3.00E-05	C C 2			Ho 166m		8		
Na 22					Tm 170		8		
Al 26					Tm 171		8		
Cl 36	8.00E-05	C 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					Tl 204		8		
Mn 54					Pb 205		8		
Fe 55	4.09E-06	C C 2			Pb 210		8		
Co 60	1.88E-05	C C 2			Bi 208		8		
Ni 59					Bi 210m		8		
Ni 63	7.93E-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	2.59E-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					Th 234	2.00E-07	C C 2		
Mo 93					Pa 231		8		
Tc 97					Pa 233		8		
Tc 99					U 232		8		
Ru 106					U 233		8		
Pd 107					U 234	2.00E-07	C C 2		
Ag 108m					U 235	4.00E-09	C C 2		
Ag 110m					U 236		8		
Cd 109					U 238	2.00E-07	C C 2		
Cd 113m					Np 237		8		
Sn 119m					Pu 236		8		
Sn 121m					Pu 238	5.21E-06	C C 2		
Sn 123					Pu 239	1.00E-05	C C 2		
Sn 126					Pu 240	9.99E-06	C C 2		
Sb 125					Pu 241	1.27E-04	C C 2		
Sb 126					Pu 242		8		
Te 125m					Am 241	3.49E-05	C C 2		
Te 127m					Am 242m		8		
I 129					Am 243		8		
Cs 134	9.50E-09	C C 2			Cm 242		8		
Cs 135					Cm 243	1.32E-08	C C 2		
Cs 137	3.31E-04	C C 2			Cm 244	2.01E-07	C C 2		
Ba 133	2.15E-08	C C 2			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	1.72E-08	C C 2			Cf 251		8		
Sm 147					Cf 252		8		
Sm 151					Unsp a		8		
Eu 152	1.19E-07	C C 2			Unsp b/g		8		
Eu 154	1.41E-07	C C 2			Total a	6.07E-05	*	0	*
Eu 155	2.34E-08	C C 2			Total b/g	1.18E-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