

WASTE STREAM	9H35	Type H Cleaner Bags
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SITE Wylfa
SITE OWNER Nuclear Decommissioning Authority

WASTE CUSTODIAN Magnox Limited

WASTE TYPE ILW

Is the waste subject to Scottish Policy: No

WASTE VOLUMES

		Reported
Stocks:	At 1.4.2022.....	<< 0.1 m ³
Total future arisings:		0 m ³
Total waste volume:		<< 0.1 m ³
Comment on volumes:	-	
Uncertainty factors on volumes:	Stock (upper): x 1.1	Arisings (upper) x
	Stock (lower): x 0.9	Arisings (lower) x

WASTE SOURCE Vacuuming of the vessel, the Remote Handling Facility and other active areas.

PHYSICAL CHARACTERISTICS

General description: The waste is one tin taken from 9H25 (tin 53) as higher activity than rest of stream and requires separate management.

Physical components (%vol): The waste consists of metal (60% vol), wood (15% vol), plastic (15% vol), glass (5% vol) and masonry (5% vol).

Sealed sources: The waste does not contain sealed sources.

Bulk density (t/m³): ~0.16

Comment on density: The density of this waste stream is taken from M/EF/WAY/EAN/0006/19 for tin 53

CHEMICAL COMPOSITION

General description and components (%wt): -

Chemical state: Neutral

Chemical form of radionuclides:
 H-3: The chemical form of tritium has not been determined.
 C-14: The chemical form of carbon-14 has not been determined.
 Cl-36: Chemical form of chlorine 36 has not been determined.
 Se-79: The chemical form of selenium-79 has not been determined.
 Tc-99: The chemical form of technetium-99 has not been determined.
 Ra: The chemical form of radium isotopes have not been determined.
 Th: The chemical form of thorium isotopes have not been determined.
 U: The chemical form of uranium isotopes have not been determined.
 Np: The chemical form of neptunium isotopes have not been determined.
 Pu: The chemical form of plutonium isotopes have not been determined.

Metals and alloys (%wt): -

	(%wt)	Type(s) / Grade(s) with proportions	% of total C14 activity
Stainless steel.....	NE		
Other ferrous metals.....	~60.0		
Iron.....			
Aluminium.....	NE		
Beryllium.....			
Cobalt.....			
Copper.....	NE		
Lead.....	NE		

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Magnox/Magnesium.....	NE
Nickel.....	
Titanium.....	
Uranium.....	
Zinc.....	NE
Zircaloy/Zirconium.....	NE
Other metals.....	NE

Organics (%wt): -

	(%wt)	Type(s) and comment	% of total C14 activity
Total cellulose.....	15.0		
Paper, cotton.....	0		
Wood.....	15.0		
Halogenated plastics	15.0		
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.....	5.0		
Cementitious material.....	0		
Sand.....			
Glass/Ceramics.....	5.0		
Graphite.....	0		
Desiccants/Catalysts.....			
Asbestos.....	0		
Non/low friable.....			

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Moderately friable.....

Highly friable.....

Free aqueous liquids..... 0

Free non-aqueous liquids..... 0

Powder/Ash..... 0

Inorganic anions (%wt): -

(%wt) Type(s) and comment

Fluoride..... NE

Chloride..... NE

Iodide..... NE

Cyanide..... NE

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..... 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: none expected

(%wt) Type(s) and comment

Acrylamide.....

Benzene.....

Chlorinated solvents.....

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Formaldehyde.....
 Organometallics.....
 Phenol.....
 Styrene.....
 Tri-butyl phosphate.....
 Other organophosphates.....
 Vinyl chloride.....
 Arsenic.....
 Barium.....
 Boron..... 0
 Boron (in Boral).....
 Boron (non-Boral).....
 Cadmium.....
 Caesium.....
 Selenium.....
 Chromium.....
 Molybdenum.....
 Thallium.....
 Tin.....
 Vanadium.....
 Mercury compounds.....
 Others.....
 Electronic Electrical Equipment (EEE)
 EEE Type 1.....
 EEE Type 2.....
 EEE Type 3.....
 EEE Type 4.....
 EEE Type 5.....

Complexing agents (%wt):

	(%wt)	Type(s) and comment
EDTA.....		
DPTA.....		
NTA.....		
Polycarboxylic acids.....		
Other organic complexants.....		
Total complexing agents.....	NE	

Potential for the waste to
 contain discrete items:

No. In & of itself not a DI; waste stream may include DIs (notably any stainless
 steel components)

PACKAGING AND CONDITIONING

Conditioning method:

Separate waste stream was identified from 9H25 to recognise potential Type B
 status of tin 53. There are no containers allocated to this stream as the intent would
 be to co-package with IP-2 waste for on site storage possibly in a MOSAIK. This
 waste would be over-packed for GDF transport. This is subject to the necessary
 BAT studies/disposability assessments and has not been confirmed.

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Plant Name: -
 Location: Wylfa Power Station.
 Plant startup date: -
 Total capacity (m³/y incoming waste): -
 Target start date for packaging this stream: -
 Throughput for this stream (m³/y incoming waste): -
 Other information: -

Likely container type:	Container	Waste packaged (%vol)	Waste loading (m ³)	Payload (m ³)	Number of packages

Likely container type comment: -
 Range in container waste volume: -
 Other information on containers: -
 Likely conditioning matrix:
 Other information: -
 Conditioned density (t/m³): -
 Conditioned density comment: -
 Other information on conditioning: -
 Opportunities for alternative disposal routing: -

Baseline Management Route	Opportunity Management Route	Stream volume (%)	Estimated Date that Opportunity will be realised	Opportunity Confidence	Comment
-	-	-	-	-	-

RADIOACTIVITY

Source: The main source of activity are the activation products Fe-55, H-3, Co-60 and Cl-36.
 Uncertainty: Specific activity is a function of Station operating history.
 Definition of total alpha and total beta/gamma: Where totals are shown on the table of radionuclide activities they are the sums of the listed alpha or beta/gamma emitting radionuclides plus 'other alpha' or 'other beta/gamma'.
 Measurement of radioactivities: Specific activities are based upon M/EF/WYA/EAN/0006/19
 Other information: -

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Nuclide	Mean radioactivity, TBq/m ³				Nuclide	Mean radioactivity, TBq/m ³			
	Waste at 1.4.2022	Bands and Code	Future arisings	Bands and Code		Waste at 1.4.2022	Bands and Code	Future arisings	Bands and Code
H 3	8.53E+00	CC 2			Gd 153		8		
Be 10		8			Ho 163		8		
C 14	1.01E+00	CC 2			Ho 166m		8		
Na 22		8			Tm 170		8		
Al 26		8			Tm 171		8		
Cl 36	5.48E-01	CC 2			Lu 174		8		
Ar 39		8			Lu 176		8		
Ar 42		8			Hf 178n		8		
K 40		8			Hf 182		8		
Ca 41		8			Pt 193		8		
Mn 53		8			Tl 204		8		
Mn 54	1.91E-03	CC 2			Pb 205		8		
Fe 55	1.20E+01	CC 2			Pb 210		8		
Co 60	1.92E+00	CC 1			Bi 208		8		
Ni 59		8			Bi 210m		8		
Ni 63	9.41E-01	CC 2			Po 210		8		
Zn 65	2.16E-04	CC 2			Ra 223		8		
Se 79		8			Ra 225		8		
Kr 81		8			Ra 226		8		
Kr 85		8			Ra 228		8		
Rb 87		8			Ac 227		8		
Sr 90	8.34E-02	CC 2			Th 227		8		
Zr 93		8			Th 228		8		
Nb 91		8			Th 229		8		
Nb 92		8			Th 230		8		
Nb 93m		8			Th 232		8		
Nb 94	8.37E-03	CC 2			Th 234		8		
Mo 93		8			Pa 231		8		
Tc 97		8			Pa 233	2.14E-08	8		
Tc 99		8			U 232		8		
Ru 106	5.81E-04	CC 2			U 233		8		
Pd 107		8			U 234	7.53E-08	8		
Ag 108m	2.47E-02	CC 2			U 235		8		
Ag 110m	4.53E-05	CC 2			U 236		8		
Cd 109		8			U 238		8		
Cd 113m		8			Np 237	2.23E-08	8		
Sn 119m		8			Pu 236		8		
Sn 121m		8			Pu 238	8.79E-03	CC 2		
Sn 123		8			Pu 239	8.35E-03	CC 2		
Sn 126		8			Pu 240	1.09E-02	CC 2		
Sb 125	4.19E-03	CC 2			Pu 241	5.89E-01	CC 2		
Sb 126		8			Pu 242		8		
Te 125m	1.05E-03	CC 2			Am 241	2.43E-02	CC 2		
Te 127m		8			Am 242m		8		
I 129		8			Am 243		8		
Cs 134	2.43E-03	CC 2			Cm 242		8		
Cs 135		8			Cm 243		8		
Cs 137	4.32E-01	CC 2			Cm 244	7.02E-03	CC 2		
Ba 133	6.13E-03	CC 2			Cm 245		8		
La 137		8			Cm 246		8		
La 138		8			Cm 248		8		
Ce 144	7.58E-05	CC 2			Cf 249		8		
Pm 145		8			Cf 250		8		
Pm 147	2.55E-03	CC 2			Cf 251		8		
Sm 147		8			Cf 252		8		
Sm 151		8			Other a				
Eu 152	1.72E-02	CC 2			Other b/g				
Eu 154	2.02E-02	CC 2			Total a	5.94E-02	CC 2	0	
Eu 155	7.10E-03	CC 2			Total b/g	2.61E+01	CC 2	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 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