



# ELLESMERE PORT HIGH TEMPERATURE HAZARDOUS WASTE INCINERATION PLANT

## RADIOACTIVE WASTE ACCEPTANCE GUIDELINES

This document outlines the conditions for acceptance of Radioactive Waste at Veolia (UK) Ltd, Ellesmere Port High Temperature Hazardous Waste Incineration plant.

### Contents

1)	Conditions of Waste Acceptance .....	1
2)	Booking/Waste Reception Procedure .....	3
3)	Activity Limits .....	4
4)	Packaging Restrictions.....	6
5)	Contact Information.....	8
6)	Appendix 1 – Radioactive Customer Declaration Form (RCDF) <b>Error! Bookmark not def</b>	

### 1) Conditions of Waste Acceptance

For a Radioactive Waste Consignment to be accepted by Veolia (UK) Ltd, Ellesmere Port HTI, it must satisfy the criteria detailed in this document **and** the standard Waste Acceptance Criteria for the plant (copy available upon request). In addition, waste is accepted based on the availability of sufficient volumetric and radiological capacity at the time of the booking.

1.1 Any customer sending radioactive waste to Ellesmere Port must have a permit issued under the Environmental Permitting Regulations 2010 (EPR10) (in Scotland and Northern Ireland the Radioactive Substances Act 1993 (RSA93) is the relevant legislation) unless the waste is exempt as per the criteria set out in EPR11 (Guidance on the scope of and exemptions from the radioactive substances legislation in the UK.)

1.2 Ellesmere Port can accept radioactive waste subject to the additional conditions set out below via the following process routes:

- ✓ Direct Burn Drum hoist - for solids (or liquids <25l) in drums with base diameter >40cm and no larger than a standard 205l drum. Plastic drums or fibre kegs are acceptable. Steel drums are acceptable subject to confirmation of specification
- ✓ Repack airlock – for small packaged solids e.g. plastic/fibre kegs, boxes or suitably sealed plastic bags.
- ✓ Shredder (SMP) – for packaged solid/sludge waste that cannot be processed by the direct burn drum hoist route. In practice, it is expected that the waste most likely to be processed via the SMP route is sludge containing naturally occurring radioactive material
- ✓ Drum Direct Injection for liquids >25l in drums or IBC's
- ✓ Bulk liquids in tankers for Direct Injection

1.3 All containers must be sound, sealed and labelled and meet the requirements set out in ADR.

1.4 The maximum permitted weight of any one individual drum destined for direct burn must not exceed 250Kg, but further weight restrictions may apply depending on chemical, physical or radiological limitations.

1.5 For waste to be processed via the shredder or drum direct injection system the overall package size must not exceed 1.2m x 1.2m x 1.2m and the weight limit is 1200kg. For drums processed via the shredder the maximum weight limit must not exceed 300kg.

1.6 The customer must ensure arrangements are in place to return any non-compliant consignment, or part thereof, delivered to Ellesmere Port should the situation arise.

1.7 Consignors must complete the attached Radioactive Customer Declaration Form (RCDF) in full (Appendix 1) and send this to the contact shown on the form.

1.8 The RCDF form requires the maximum surface dose rate in microSieverts per hour at the external surfaces of **every** package measured using a suitable hand held radiation dose rate monitor.

1.9 Most radioactive waste is subject to the Environmental Permitting (England and Wales) Regulations 2010 (EPR10). A permit is not generally required for activities involving radioactive wastes that are exempt from requiring an environmental permit by section 15 of the Radioactive Substances Act 1993.

However, the Waste (England and Wales) Regulations 2011 brings wastes under three particular radioactive substances exemption orders into waste control. When radioactive waste requires a permit as a radioactive

substances activity under EPR10 but has one or more hazardous properties, it is not covered by hazardous waste controls. However, where radioactive waste is exempt from requiring an environmental permit as a radioactive substances activity under EPR10, it is subject to hazardous waste controls if it has one or more hazardous properties arising, other than from its radioactive nature.

The RCDF appendix captures the necessary information to produce both a Radioactive Transport Document and a Hazardous Waste Consignment note should this be required.

1.10 The following types of radioactive wastes must generally be excluded from wastes sent to Ellesmere Port. Deviation from this specification will only be granted with the prior written consent of Veolia (UK) Ltd.

- ✓ Uranium and thorium metal
- ✓ Sealed sources in the form of ceramic beads/pellets or metal capsules that are likely to remain intact in the incineration process eg:
  - ✓ Smoke detectors containing radioactive sources.
  - ✓ Any sealed non-dispersible radioactive sources, for example, sources comprising cobalt-60, nickel-63 caesium-137, americium-241 and whether present as capsules or foils.
  - ✓ Radioactive lightning conductors.
  - ✓ Anti-static devices that use a radiation source (e.g. polonium-210)
  - ✓ Large metallic objects such as valves, piping, ducting and flanges.
  - ✓ Lead including chevron bricks and shielding >1kg lead in type A packages

Attention is drawn to the standard Waste Acceptance Criteria for Ellesmere Port which covers all non-radiological contamination restrictions (copy available upon request)

1.11 Any bulk tanker for direct injection with low levels of alpha emitting radionuclides must be a free flowing liquid with no suspended solids present. This is to ensure that there is no unacceptable contamination of our processing systems by high levels of suspended solids which may become deposited in pumps/pipework.

## **2) Booking/Waste Reception Procedure**

2.1. Before any radioactive waste (as defined in EPR11 Amendment Regulations) can be accepted at Veolia (UK) Ltd Ellesmere Port the customer must supply a 'Letter of Intent' outlining the types of materials they intend to send and

confirming they will comply with the contents of this document. Veolia (UK) Ltd will then issue a letter of acceptance 'in-principal'.

- 2.2. For each and every subsequent shipment the customer must complete and email the attached Radioactive Customer Declaration Form (RCDF) in full (Appendix 1) and send this to the contact shown on the form.
- 2.3. The detail of the declaration form will then be checked by an appointed RPS to ensure that it can be accepted on site for incineration. The Veolia representative will signify acceptance of the load on the date in question by issuing a unique Booking Reference number. This Booking Reference number must be presented to the Site Security on arrival.
- 2.4. Permit restriction imposed at Ellesmere Port place strict controls on both the quantity of waste in storage and the amount of material that can be processed during any day/month/year. There may be occasions beyond our control which result in a pre-arranged booking being postponed if these permit restrictions cannot otherwise be complied with.
- 2.5. To allow sufficient inspection time the receipt of any radioactive waste can only occur between the hours of 8AM and 3PM.
- 2.6. In accordance with ADR (Section 5.4) all shipments of Radioactive Waste (as defined in EPR11) must be accompanied by a 'Consignment Note'. Consignors must consult their RPA, DGSA or Waste Carrier if they are in doubt as to how to meet this requirement. Veolia (UK) Ltd can produce this consignment note on your behalf based on the information declared in the RCDF, but accept no legal responsibility for the information contained therein.
- 2.7. For the benefit of both Veolia and the carrier of their wastes, consignors are strongly recommended to include with their consignment written information of who within their organisation can be contacted in the event of accidents or queries involving their wastes.

### 3) Activity Limits

- 3.1 Veolia (UK) Ltd EPR10-RSR permitted daily, monthly and consignment limits are specified in the table below.

Radionuclides	Daily disposal limits	Monthly disposal limits	Consignment Limit
$^3\text{H}$	500 GBq	5 TBq	800GBq

<sup>14</sup> C	150 GBq	1.5 TBq	360GigaBq
<sup>125</sup> I, <sup>131</sup> I, <sup>32</sup> P, <sup>35</sup> S, <sup>60</sup> Co, <sup>90</sup> Sr, <sup>137</sup> Cs	400 MBq	4 GBq	320MBq
NORM radionuclides from the <sup>238</sup> Usec, <sup>235</sup> Usec, <sup>232</sup> Thsec, <sup>226</sup> Ra+, <sup>228</sup> Ra+, <sup>210</sup> Pb+, <sup>210</sup> Po+ series*	720 MBq of each nuclide in chain	7.2 GBq of each nuclide in chain	320MBq
<sup>241</sup> Am	20 MBq	200 MBq	40MBq
Mixed βγ	1 GBq	10 GBq	320MBq
Mixed α	20 MBq	200 MBq	40MBq

\* includes <sup>238</sup>Usec, <sup>238</sup>U+, <sup>234</sup>U, <sup>230</sup>Th, <sup>226</sup>Ra+, <sup>210</sup>Pb+, <sup>210</sup>Po, <sup>235</sup>Usec, <sup>235</sup>U+, <sup>231</sup>Pa, <sup>227</sup>Ac+,  
<sup>232</sup>Thsec, <sup>232</sup>Th, <sup>228</sup>Ra+, <sup>228</sup>Th+

- 3.2 For wastes containing mixed radionuclides the total activity from all listed radionuclides in each separate category must be summed.
- 3.3 The customer is responsible for ensuring packaging meets the requirements of ADR and must declare the type of packaging used on the consignment note accompanying each load.
- 3.4 The maximum Surface Dose Rate limit is 20 microSieverts per hour at the surface of any package and increase to this limit may be acceptable subject to Veolia (UK) Ltd prior written agreement.
- 3.5 For NORM:

Total NORM activity must be assessed in accordance with EPR11 amendment regulations, the method of calculating total activity must be included on the RCDF.

You must record the activity of the single radionuclide with the highest activity in each decay chain beginning with nuclides:

U-238sec, U-235sec, Th-232 sec, Ra-226+, Ra-228+, Pb-210+, Po-210

Uranium 238	Thorium 232	Uranium 235
		<i>1/21 of U-238 chain</i>
<b>U-238</b>	<b>Th-232</b>	<b>U-235</b>
Th-234	<b>Ra-228</b>	Th-231
Pa-234	Ac-228	Pa-231
U-234	Th-228	Ac-237
Th-230	Ra-224	Th-227
<b>Ra-226</b>	Rn-230	Ra-223
Rn-222	Po-216	Rn-219
Po-218	Pb-212	Po-215
Pb-214	Bi-212	Pb-211
Bi-214	Po-212	Bi-211
Po-214	Tl-208	Po-211
Tl-210	Pb-208	Tl-207
<b>Pb-210</b>		<b>Pb-207</b>
Bi-210		
<b>Po-210</b>		
Pb-206		

Producers must identify from the 3 natural decay chains the head of the chain and record the activity associated with the nuclide with the highest activity in that chain in the RCDF. For chains in secular equilibrium this would be reported against the nuclide at the top of the list ie U238 sec, Th 232 sec and U 235 sec. Only one figure should be reported from each column. (Table 4.1 of EPR11 gives further clarification)

#### 4) Packaging Restrictions

As identified previously in section 1 waste can be accepted in the following formats. In addition to radiological issues, your attention is again drawn to our standard terms of Waste Acceptance (copy available upon request)

Process Route	Packaging restrictions
Direct Burn Drums	For solids (or liquids <25l) in drums with base diameter >40cm and no larger than a standard 205l drum. Plastic or fibre drums are preferable however steel drums are acceptable subject to confirmation of specification. Maximum weight 250kg, but lower weights may be required depending on the chemical/physical nature of the waste.
Repack airlock	Small packages can be processed through the repack airlock, subject to confirmation of size suitability
Drummed Liquid Direct Injection	For drums or IBC's containing greater than 25l liquid. Any drum/package containing more than 25litres of liquid with low levels of alpha emitting radionuclides must be a free flowing liquid with no suspended solids present
Shredder	For drums (Max 300kg) or IBC's containing NORM solids/sludge (Max 1200kg).
Bulk liquids in tankers for Direct Injection	Subject to Veolia (UK) Ltd prior written agreement.

Radioactive Waste cannot routinely be accepted in:

- ✓ Wheelie-bins - other than those with a drop down front to allow safe access to the inner containers. The surface dose rate limit of 20 microSieverts/hr applies to the inner containers.
- ✓ Returnable containers that require their contents emptying at Ellesmere Port, where the outer container has been used to control surface dose rate with the exception of transport 'shipping' containers.

**4.1** All consignments of radioactive wastes are checked upon arrival to confirm the declared surface dose rate applies and for evidence of external radioactive contamination. In order to comply with ADR consignors must ensure that there is no contamination on the outside of waste packages.

**4.2** All packages must be labelled in accordance with ADR requirements, consignors must consult their RPA or DGSA if clarification is required. However the following additional site-specific requirements exist:

- ✓ Surface dose rate must be written on every drum
- ✓ All packages must include a trefoil.
- ✓ All packages must be numbered to correspond with the information provided on the RCDF.

## 5) Contact Information

### **For Sales enquiries:**

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