

## WINFRITH FACILITY WASTE ACCEPTANCE CRITERIA

### The Winfrith Facility

Tradebe Inutec operates its radioactive waste management business on the Nuclear Licensed Winfrith site (Licence Number 85), regulated by the Office for Nuclear Regulation under the Nuclear Installations Act, and is regulated under the Environmental Permitting (England and Wales) Regulations 2010 for solid, liquid and gaseous discharges. Copies of the Nuclear Site Licence and Permit are available on request.

Our facilities have a radionuclide inventory limit controlled by our overall safety case. The inventory limit is set to manage the facility that includes a number of separate laboratories, processing plant and radioactive material storage units, which receive a wide range of radionuclides for processing.

### Maximum Inventory of Specific Nuclides

An illustration of the maximum inventory for a selection of radionuclides that represent 20% of the overall inventory limit is given below. These values are subject to negotiation of higher acceptance limits on a case-by-case basis depending upon detailed discussions between the customer and the business.

Table 1 uses data for the nuclide in solid form (except for H-3) and represents a typical consignment that may be accepted in sealed packages, such as drums or ISO containers.

**Table 1 Solid material (except H-3)**

Nuclide	Inventory (Bq)
Am-241	1.5E+10 (15 GBq)
Co-60	2.0E+13 (20 TBq)
Cs-137	1.4E+14 (140 TBq)
Pu-239/240	1.3E+10 (13 GBq)
U-235	7.4E+10 (74 GBq)
H-3*	1.8E+13 (18 TBq)

\* In gaseous form; H-3 maximum inventory limit that can be accepted is 1000 TBq

### General Waste Acceptance Criteria

All solid low level waste for processing in the Winfrith Facility must be contained. Waste can be received in a range of containers that are approved for transport by road or rail, for example, full-height ISO containers, half-height ISO containers (TC01/TC02), skips and mild steel drums. Drums may be contained in standard ISO containers that form the shipment. Other containers will be accepted, subject to prior agreement with Tradebe Inutec. Items which are not contained, e.g. SCO-I or LSA-I, may be accepted by prior agreement.

Under the existing safety case, Tradebe Inutec is able to receive a wide range of materials for processing and subsequent recycling/disposal. However, some materials require prior notification to ensure that they meet both Tradebe Inutec's safety case requirements and onward recycling/disposal requirements. A list of such items requiring notification and agreement prior to acceptance at our facilities is shown below:

- Liquids with flashpoint less than 21 °C absorbed on solid material.
- Metals and other materials which readily react either with water or air with the evolution of heat or flammable gases.

- Materials that present an explosive hazard.
- Materials which generate or are capable of generating toxic gases, vapours or fumes harmful to persons or causing an explosive hazard.
- Strong oxidising agents.
- Pressurised gas cylinders or pressurised aerosol containers.
- Chemical complexing agents or chelating agents, such as EDTA, citric acid, amines and phosphines.
- Biological, pathogenic or infectious materials listed within Hazard Groups 2, 3 and 4 in the Approved List of biological agents [1].
- Putrescible materials (materials liable to be readily decomposed by micro-organisms, excluding wood and paper).
- Non-aqueous liquids absorbed on solid material.
- Sealed sources.
- Hazardous waste [2]
- Active Particles [3] in the size range of 0.6 to 2.0 mm of high-specific activity material such that a single particle could bear of the order of 1 MBq or more of alpha-emitting radionuclides or 0.01MBq or more of radium-226, typically more than about 100 MBq g<sup>-1</sup> of most alpha-emitting radionuclides or 10 MBq g<sup>-1</sup> of radium-226, e.g. fragments of Admiralty specification radium-sulphide paint, fragments of irradiated nuclear fuel (especially PWR, MOX or highly-enriched uranium fuels) or plutonium.

In addition certain other generic conditions apply, unless prior agreement has been reached with Tradebe Inutec for receipt (given on a case by case basis), as detailed below:

- a) The radiation level at any point on the external surface of the transport container or any package within it shall not exceed 2mSv/h. The dose rate must be clearly recorded for each item.
- b) Non fixed contamination levels on the external surfaces of the transport container or any package within it shall not exceed 4 Bq/cm<sup>2</sup> for beta and gamma emitters and low toxicity alpha emitters and 0.4 Bq/cm<sup>2</sup> for all other alpha emitters.
- c) The mass of a transport container and its contents or unpackaged item shall not exceed 25 tonnes.
- d) Any container shall be in good condition such that it meets the regulations for transport if it is being used a primary container or is in such condition that it allows safe handling using conventional techniques such as fork lift truck.
- e) Each container and package within it / item shall be marked with a unique identification number; there should only be one such number on each container / package and the numbering system used should be similar for all containers from one supplier.

Additional criteria may also apply for specific treatment services, such as cementation, supercompaction, incineration and metal treatment, depending on the nature of the treatment process and / or the acceptance criteria of the disposal facility. Tradebe Inutec will be happy to discuss these on a case by case basis.

Tradebe Inutec  
B44, Winfrith  
Dorchester  
Dorset DT2 8WQ

Tel: 01305 202587  
Fax: 01305 202663  
Email: [info@inutec.co.uk](mailto:info@inutec.co.uk)

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1 Approved List of Biological Agents, Advisory Committee on Dangerous Pathogens  
2 The Hazardous Waste (England and Wales) Regulations 2005 as amended  
3 Low Level Waste Repository Ltd, Waste Acceptance Criteria – Low Level Waste Disposal, WSC-WAC-LOW