

Guidance on the Shipment of Wastes which contain Naturally Occurring Radioactive Material (NORM)

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Abbreviations and definitions

EA	Environment Agency
EC	European Commission
EPR10	Environmental Permitting Regulations 2010
EU	European Union
FPSO	Floating Production Storage and Offloading vessel
LLW	Low Level Radioactive Waste
MARPOL	The International Convention for the Prevention of Pollution from Ships
DAERA	Department of Agriculture, Environment and Rural Affairs
NORM	Naturally Occurring Radioactive Material
NORM waste	Those wastes containing or contaminated with NORM that fall within the scope of the domestic radioactive waste management legislation and which have not been processed for their radioactive fissile or fertile properties
NRW	Natural Resources Wales
OECD	Organisation for Economic Co-operation and Development
Oily water	Oil and gas production process waters containing oil and water
RSA93	Radioactive Substances Act 1993
SEPA	Scottish Environment Protection Agency
SFRWD	Spent Fuel and Radioactive Waste Directive (Council Directive 2006/117/EURATOM on the supervision and control of shipments of radioactive waste and spent fuel)
TFSRW	Transfrontier Shipment of Radioactive Waste and Spent Fuel Regulations (2008)
UK	United Kingdom
WSR	Waste Shipments Regulation (EC) No. 1013/2006

1. Scope

This guidance sets out the regulatory controls and associated policy framework that apply to the import and export of wastes which contain NORM (naturally occurring radioactive material). It builds upon the statements in the UK NORM Waste Strategy¹ and has been produced with the aim of clarifying the regulatory framework. It applies to all NORM wastes arising from “NORM industrial activities” and includes specific guidance for the offshore industry in Annex 2.

Whilst this document is SEPA guidance and is applicable to Scotland only, other relevant UK authorities have been consulted during its preparation. Therefore, the key points should be applicable across the UK. However, for shipments of NORM waste to or from parts of the UK other than Scotland, it is recommended that the relevant regulatory authority is contacted to confirm their specific requirements.

2. Summary

The key points set out in this guidance are that shipments of waste which contain NORM must be undertaken in accordance with:

- The Waste Shipments Regulation (WSR)²
- A radioactive substances permit^{*} issued under the UK’s domestic radioactive waste management legislation³
- In determining whether to approve applications under the above mentioned legislative measures, the relevant environment agencies[†] will have due regard to all relevant UK policy on the import and export of radioactive and non-radioactive wastes, which in brief is:
 - With some exceptions, waste shipments for the purpose of disposal are prohibited.
 - NORM waste is classed as radioactive waste by UK legislation and shipment to other countries is only allowed where waste management facilities in those countries meet the same standards as are required within the European Union (EU).
 - Applications for the shipment of NORM waste must be supported by an assessment of all practicable waste management options.

3. Introduction

The shipment of waste into and out of the UK is subject to various international conventions, EU and domestic legislation depending on the exact nature of the waste.

Some wastes contain or may be contaminated with NORM. The UK NORM Waste Strategy reported that waste managers were uncertain of the regulatory regimes and processes

^{*} The term permit is used here to refer to either an authorisation granted by the Scottish Environment Protection Agency or Department of Agriculture, Environment and Rural Affairs under the Radioactive Substances Act 1993, or a permit granted by the Environment Agency or Natural Resources Wales under the Environmental Permitting Regulations 2016

[†] Scottish Environment Protection Agency (SEPA) in Scotland, Environment Agency (EA) in England, Natural Resources Wales (NRW) in Wales and Department of Agriculture, Environment and Rural Affairs (DAERA) in Northern Ireland.

controlling the import and export (shipments) of such wastes. This guidance is intended to provide clarity on the regulatory arrangements.

4. Which Transfrontier regime applies to waste containing NORM?

Generally, the controls set down in the Waste Shipments Regulation apply to shipments of waste, unless, due to some specific characteristics of the waste (e.g. it is classed as radioactive waste) equivalent controls are provided by an alternative mechanism. Article 1(3) of the WSR provides exclusions where such equivalent controls are in place and, relevant to this guidance, Article 1(3)(c) provides an exclusion for shipments of radioactive waste which are subject to supervision and control under Euratom arrangements.

Euratom controls are contained within the Directive on the supervision and control of shipments of radioactive waste and spent fuel⁴ (SFRWD) which have been implemented into UK law by The Transfrontier Shipment of Radioactive Waste and Spent Fuel Regulations 2008 (TFSRW). However, the Euratom Directive (and the UK implementing Regulations) also contains exclusions, one of which is relevant to wastes containing NORM. Article 1(5) of the Directive excludes:

“transboundary shipments of waste that contains only naturally occurring radioactive material which does not arise from practices”

The TFSRW use the definition of practice contained in the Basic Safety Standards Directive⁵ which for NORM is restricted to those that have been processed for their radioactive fissile or fertile properties. Examples of wastes containing NORM that are processed for their radioactive, fissile or fertile properties and which would be subject to Euratom shipment controls include those from the nuclear fuel cycle and those arising from radium luminising and the management of luminised equipment.

Wastes containing NORM not subject to Euratom shipment controls include all those that are categorised by the UK's domestic radioactive waste management legislation as arising from a “NORM industrial activity” e.g. the oil and gas industry and the titanium dioxide industry. As the Euratom controls do not apply to such wastes, they fall back under the EU “conventional” waste shipments controls.

Key point 1: Wastes that contain or are contaminated with NORM not processed for their radioactive, fissile or fertile properties fall under the provision of the EU conventional waste shipments controls.

5. Are there any controls on the radioactive properties of wastes that contain or are contaminated with NORM?

Many wastes that contain NORM are classed as radioactive waste by the UK's domestic radioactive waste management legislation; this includes both those that are processed for their radioactive fissile and fertile properties and those that are not⁶. Those that fall within the scope of the domestic legislation and that have not been processed for their radioactive fissile or fertile properties, i.e. arise from a NORM industrial activity, are referred to in this document as NORM waste.

Domestic radioactive waste management legislation controls the receipt, accumulation and disposal of radioactive waste. Under this legislation "disposal" of radioactive waste is defined as including removal from any premises. Therefore, an export of NORM waste from the UK falls within this definition of disposal and must be made in accordance with an appropriate permit. Government, in the UK NORM Waste Strategy, have stated that NORM waste is subject to the same policy framework as other types of radioactive waste. Consequently, when the relevant environment agency determines whether or not to grant a permit allowing the export of NORM waste it will take account of the requirements of associated national policies on radioactive waste. This will normally require liaison with the competent authority in the country of destination to determine if it is necessary for any resulting NORM waste to be repatriated.

Similarly, as the act of receiving radioactive waste is controlled through domestic radioactive waste legislation, Government have made it clear that they expect the environment agencies to ensure that any proposals for the import of NORM waste are appropriately controlled i.e. only allowing receipt of waste from overseas if it accords with UK policy.

Key Point 2: Shipments of NORM waste into and out of the UK must be appropriately permitted under domestic radioactive waste legislation.

6. When will shipments be allowed?

Shipments will be assessed on a case by case basis by the relevant environment agency that is the competent authority for both the waste shipment regulations and the domestic radioactive waste legislation. When determining whether to allow shipments under these regimes, the environment agencies will comply with all relevant legislative requirements and take account of all relevant policy. This document does not reproduce that legislation and policy but rather provides a high level summary along with references for further detail.

6.1 Policy Requirements

In terms of “conventional” waste (those that are shipped under the WSR), policy on shipments for disposal is set out in the UK Plan for Shipments of Waste⁷. Policy on shipments for recovery is encompassed in the WSR itself; this includes implementation of the ‘Basel Ban’ whereby exports of hazardous waste to developing (non Organisation for Economic Co-operation and Development (OECD)⁸) countries are prohibited. Exports of non-hazardous waste outside the OECD must be to a recovery facility that should be operated according to human health and environmental protection standards that are broadly equivalent to those within the EU. For NORM wastes, applicable radioactive waste policy is set out in the UK Low Level Waste (LLW) Policy⁹.

There are many commonalities between “conventional” waste policy and radioactive waste policy, in particular, the principles of proximity, self-sufficiency and application of the waste hierarchy. However, there are also specific requirements in each regime; the principle ones are set out below.

UK waste policy allows shipments of waste for the purposes of recovery to and from the UK but shipments of waste for disposal are prohibited. There are some exceptions to the prohibition of shipments for disposal, see UK Plan for Shipment of Waste for more information.

The LLW Policy states that shipments of radioactive waste to and from the UK should only be consented in light of an assessment of all practicable options, and should not be permitted except:

- for the recovery of re-useable materials; or
- for treatment that will make its subsequent storage and disposal more manageable.

Additionally, the LLW Policy states that in all cases where such processes would add materially to the wastes needing to be disposed of in the country of destination, the presumption should be that they will be returned to the country of origin to a timescale agreed by the competent authorities in the countries of destination and origin.

It is recognised that these policy requirements may conflict in certain circumstances for example repatriation of residual NORM scale back to the UK following treatment of contaminated metals is likely to be considered an import for disposal under the WSR. Where such a situation arises this would be addressed on a case by case basis, in liaison with the relevant Government departments, taking into account the specific circumstances of the proposed shipment.

6.2 The safe management of spent fuel and radioactive waste

The SFRWD includes requirements on the disposal of radioactive waste overseas (See Article 4(4)). In summary, there is a presumption of self-sufficiency and strict requirements regarding the export of radioactive waste to countries outside the EU which include ensuring that radioactive waste management standards are equivalent to those required within the EU.

These requirements are consistent with UK radioactive waste policy, which has long included the principle of self-sufficiency. The environment agencies will ensure that the export requirements of the SFRWD as they apply to NORM wastes are complied with when determining applications for disposal under domestic radioactive waste management legislation. This will include scrutiny of an assessment of all practicable options, as required by UK policy, and in cases where radioactive waste is proposed to be shipped outside the EU, consideration of the radioactive waste management arrangements and infrastructure in the destination country.

It is noted that Article 2(2)(a) of the SFRWD has the effect of excluding certain NORM waste from its scope. However, it is the UK position¹⁰ that NORM wastes are subject to the same regulatory framework as all other types of radioactive waste and “no distinction is made between those that are within scope of Directive 2011/70/EURATOM and those that are not”.

Key Point 3: In determining whether to approve shipment applications the environment agencies will have due regard to all relevant UK policy on the import and export of radioactive and non-radioactive wastes, which in brief is:

- **With some exceptions, waste shipments for the purpose of disposal are prohibited.**
- **NORM waste is radioactive waste and shipment to other countries is only allowed where waste management facilities in those countries meet the same standards as are required within the European Union.**
- **Applications for shipment of NORM waste must be supported by an assessment of all practicable waste management options.**

7. What do operators wishing to carry out shipments of NORM waste need to do?

You must:

1. Comply with the WSR and make the appropriate notification to the relevant environment agency. Guidance providing further information on the principles determining WSR applications is available.
 - [An introduction to moving waste between countries](#)
 - [Moving waste between countries: determining the controls on waste exports](#)
 - [Moving waste between countries: determining the controls on waste imports](#)
 - [Moving notified waste between countries](#)
2. Have a suitable radioactive substances permit which allows disposal to the overseas facility in question. If necessary you will need to apply for a variation to have this route added. Such an application should be supported by an assessment of all practicable waste management options and information on the quantities and types of NORM waste involved (See Annex 1)

It is recommended:

1. That you engage as soon as possible with the relevant environment agency to discuss any potential shipments. We can then provide advice regarding the information and level of assessment required for us to determine an application.
2. That WSR and radioactive substances permit applications are submitted at the same time. This will enable us to co-ordinate their determination.

Annex 1

Further guidance on information required to support a radioactive substances permit application for shipment of NORM waste overseas

1. Assessment of all practicable options

The LLW Policy states that shipments of radioactive waste to and from the UK should only be consented in light of an assessment of all practicable options. This part of the document provides guidance on what information is expected in a radioactive substances permit application to demonstrate that all practicable options have been assessed.

The requirement to assess all practicable options is a part of radioactive waste policy and is in place to ensure that the optimum waste management option has been selected for radioactive waste. It is also important that waste management decisions have due regard to the principle of self-sufficiency that underpins the import/export aspect of radioactive waste policy.

It is recognised that proposed NORM shipments can encompass a wide range of scenarios, e.g. a consignment of liquid waste which is all considered to be radioactive, radioactively contaminated equipment such as tubulars or pumps, or a mixture of radioactive and non-radioactive waste such as a decommissioning offshore installation. With this in mind it is not possible to be prescriptive about how the information should be presented, however the application should include the following information.

- i. A description and justification of the chosen radioactive waste management methodology – treatment and subsequent disposal
- ii. Justification for the waste management location being outside the UK

In terms of the chosen waste management methodology it is necessary to provide an overview of the different management options considered and explain why the chosen option was selected. The level of detail of the options assessment to be included in the application will depend on various factors, including; whether or not the chosen option represents “standard practice” or whether the characteristics of the waste (chemical, physical and radiological) require a more novel waste management approach.

The justification for the waste management location being outside the UK should include commentary on the availability of the selected waste management option in the UK and if they are available why use of those is not practicable, e.g. in the case of a decommissioning offshore installation there may not be suitable port facilities to receive that installation. However, we note that an offshore installation is effectively a shipment of mixed waste and would expect that consideration is given to removing radioactive waste prior to shipment (as is standard for waste sealed sources).

Where relevant, it is acceptable to refer to other documentation and processes where these played a role in selecting the proposed radioactive waste management option, e.g. offshore installation decommissioning plan, competitive tender exercise. The relevance of these documents to the radioactive waste management decision should be clearly explained.

2. Quantities of NORM waste involved

It is important that the application contains sufficient information on the quantities of NORM waste involved so that the relevant environment agency can determine the application. This includes liaising with the competent authorities in the destination country who will need relevant information to be able to determine how the NORM waste falls within their own regulatory framework.

As a minimum applications should include:

- Mass of NORM waste
- Volume of NORM waste
- Total activity of each of the major radionuclides (e.g. Ra-226, Ra-228, Pb-210, Po-210)
- Expected typical radionuclide concentration
- Expected maximum radionuclide concentration
- Details on any other properties that may affect treatment (e.g. hazardous properties such as hydrocarbon or heavy metal content)

The relevant environment agency needs to have confidence in your information so it is important that the methodology used to derive the data is provided including some consideration of uncertainties. It may be appropriate to make a best estimate using the average NORM concentration and then a best and worst case assumption using the lowest and highest activities. Estimates may use data such as previous sampling, records of previous shipments, equivalent calculations from similar equipment etc.

Annex 2

Specific guidance for the offshore industry

This Annex provides specific guidance on topics that have previously been raised by the offshore industry. Section 1 relates to exclusions from the WSR and their applicability to the offshore oil and gas industry. Section 2 specifies certain substances and articles which would normally be considered waste.

1. Waste Shipment Exclusions

Article 1(3) (a) *the offloading to shore of waste, including waste water and residues, generated by the normal operation of ships and offshore platforms, provided that such waste is subject to the requirements of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78), or other binding international instruments;*

This exclusion does not apply to all wastes from offshore installations[‡] (including Floating Production Storage and Offloading FPSO units). The purpose of the exclusion is not to replicate the provisions of MARPOL, which applies to waste generated from the “normal” operation of ships. The unified interpretation of MARPOL states that:

“there are five categories of discharges that may be associated with the operation of fixed or floating platforms covered by this regulation when engaged in the exploration and exploitation of mineral resources, i.e.:

- i. machinery space drainage;
- ii. offshore processing drainage;
- iii. production water discharge;
- iv. displacement water discharge; and
- v. contaminated seawater from operational purposes such as produced oil tank cleaning water, produced oil tank hydrostatic testing water, water from ballasting of produced oil tank to carry out inspection by rafting.”

It goes on to say that of these categories, only the discharge of machinery space drainage and contaminated ballast should be subject to MARPOL 73/78. As the other 3 categories are not subject to MARPOL 73/78 they are subject to the requirements of the WSR.

[‡] “offshore installation” means a stationary, fixed or mobile facility, or a combination of facilities permanently inter-connected by bridges or other structures, which is—
(a) in offshore waters; and
(b) used for offshore oil and gas operations or in connection with such operations

Article 1(3)(b) *waste generated on board vehicles, trains, aeroplanes and ships, until such waste is offloaded in order to be recovered or disposed of;*

Offshore installations are not covered by this exclusion.

It should also be noted that within The Transfrontier Shipment of Waste Regulations 2007, which form part of the UKs implementation of the WSR, mobile vessels undertaking hydrocarbon-related activities (e.g. FPSOs) fall within the definition of an “offshore installation” (Regulation 4B) and are thus not defined as a “ship”.

2. What is waste?

There is extensive guidance on what constitutes waste^{11,12} and this will not be reproduced here. However to be clear regarding our expectation of what requires waste shipment controls the list below includes substances that we would normally consider to be waste.

- i. Offshore installations that are being sent for dismantlement.
- ii. Contaminated equipment (tubulars, pumps) which have been sent for scrapping.
- iii. Produced water.
- iv. Oily water.

References

¹ Strategy for the management of Naturally Occurring Radioactive Material (NORM) waste in the United Kingdom <https://www.gov.uk/government/consultations/strategy-for-the-management-of-naturally-occurring-radioactive-material-norm-waste-in-the-united-kingdom>

² EC Regulation 1013/2006 on shipments of waste

³ Radioactive Substances Act 1993 (RSA 93) or Environmental Permitting Regulations 2016 (EPR16)

⁴ Council Directive 2006/117/Euratom on the supervision and control of shipments of radioactive waste and spent fuel

⁵ COUNCIL DIRECTIVE 96/29/EURATOM laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation

⁶ See Guidance on the scope of and exemptions from the radioactive substances legislation in the UK (September 2011) for further information

⁷ <https://www.gov.uk/government/publications/uk-plan-for-shipments-of-waste>

⁸ <http://www.oecd.org/env/waste/theoecdcontrolsystemforwasterecovery.htm>

⁹ Policy for the Long Term Management of Solid Low Level Radioactive Waste in the United Kingdom (2007)

¹⁰ See chapter 6 of the Lead Document setting out the United Kingdom's National Programme for the Responsible and Safe Management of Spent Fuel and Radioactive Waste <https://www.gov.uk/government/publications/the-uks-national-programme-to-the-eu-commission-on-the-responsible-and-safe-management-of-spent-fuel-and-radioactive-waste>

¹¹ <http://www.sepa.org.uk/regulations/waste/guidance>

¹² <https://www.gov.uk/guidance/waste-legislation-and-regulations>