

## Standard Rules SR2014 No 4

# Accumulation and disposal of radioactive waste from the NORM Industrial Activity of the production of oil and gas

## Introductory Note

This introductory note does not form part of these standard rules. These rules only relate to the activity(ies) specified and cannot be taken to allow or control other permissible activities.

When referred to in an environmental permit, these rules will allow an operator to carry on the accumulation and disposal of radioactive waste containing naturally occurring radioactive material (NORM) arising from the production of oil and gas.

The rules allow NORM wastes to be accumulated and disposed of, in the form of gaseous waste, aqueous waste and solid waste. The rules limit the amount of aqueous radioactive waste that can be held on site at any one time and require aqueous and solid wastes to be disposed of within 3 months. The rules authorise these wastes to be disposed of by transfer to operators who are themselves permitted to receive and dispose of these radioactive wastes. The rules allow direct disposal of gaseous wastes to the environment.

In addition, the rules authorise

- the disposal of any residual well stimulation fluids, containing NORM, which have remained underground rather than returned to the surface after use;
- the disposal to the underground strata of NORM present in water brought to the surface from the production of oil and gas.

For clarity, this is NORM that was present in the underground rock before the industrial activity took place, and has either remained there throughout or has been returned underground after being brought to the surface in the oil or gas abstracted from the rock.

The Health and Safety Executive regulates activities involving work with ionising radiation under the Ionising Radiation Regulations 1999 for the protection of the workforce. Those regulations cover accidents and contingency arrangements in the event of accidents involving radioactive materials and waste, including any off-site effects and response.

# Rules

## 1 – Management

### 1.1 General management

- 1.1.1 The operator shall manage and operate the activities:
- (a) in accordance with a written management system that is sufficient to ensure compliance with the conditions of these rules; and
  - (b) using sufficient competent persons and resources.
- 1.1.2 The operator shall maintain records demonstrating compliance with rule 1.1.1.
- 1.1.3 Any person having duties that are or may be affected by the matters set out in these rules shall have convenient access to a copy of them kept at or near the place where those duties are carried out.
- 1.1.4 The operator shall manage and operate the activities in consultation with such suitable radioactive waste advisors as are necessary for the purpose of advising the operator as to compliance with these rules.

## 2 – Operations

### 2.1 Permitted activities

- 2.1.1 The operator is only authorised to carry on the activities specified in Table 1 .

Table 1: activities		
Activity listed in Schedule 23 of the Environmental Permitting Regulations	Description of activity	Limit of activity
Sch 23 Part 2 para 11(2)(c)	Accumulation of radioactive waste on the premises	The NORM Industrial Activity of the production of oil and gas
Sch 23 Part 2 para 11(2)(b)	Disposal of radioactive waste on or from the premises	The NORM Industrial Activity of the production of oil and gas

### 2.2 The site

- 2.2.1 The activities shall not extend beyond the site, being the land edged in green on the site plan attached to the permit and the area adjacent to the wellbore(s).

### 2.3 Operating techniques

- 2.3.1 The operator shall use the best available techniques to:
- (a) minimise the period over which radioactive waste is accumulated;
  - (b) minimise the activity of radioactive waste produced on the premises that will require to be disposed of on or from the premises;
  - (c) ensure that all relevant parts of the premises are constructed, maintained and used in such a manner that:
    - (i) they do not readily become contaminated; and
    - (ii) any contamination which does occur can be easily removed;

- (d) prevent:
- (i) the loss of any radioactive waste; and
  - (ii) access to any radioactive waste by any person not authorised by the operator.
- 2.3.2 The operator shall use the best available techniques in respect of the disposal of radioactive waste pursuant to these rules to:
- (a) minimise the activity of gaseous and aqueous radioactive waste disposed of by discharge to the environment;
  - (b) minimise the volume of radioactive waste disposed of by transfer to other premises; and
  - (c) dispose of radioactive waste at times, in a form, and in a manner so as to minimise the radiological effects on the environment and members of the public.
- 2.3.3 The operator shall maintain in good repair the systems and equipment provided to:
- (a) meet the requirements of rules 2.3.1 and 2.3.2 and
  - (b) carry out any monitoring and measurements necessary to determine compliance with these rules.
- 2.3.4 The operator shall check, at an appropriate frequency, the effectiveness of systems, equipment and procedures provided to meet the requirements of rules 2.3.1 and 2.3.2.
- 2.3.5 Any container in which radioactive waste is stored shall be clearly and legibly marked with the word 'Radioactive', with the ionising radiation symbol conforming with BS 3510: 1968 or ISO 361 and any other information necessary for the identification of the radioactive waste present.
- 2.3.6 The operator shall have and comply with appropriate criteria for the acceptance into service of systems, equipment and procedures for carrying out any monitoring and measurements necessary to determine compliance with these rules.
- 2.3.7 The operator shall post copies of the permit, including these rules, on the premises, in such characters and in such positions to be conveniently read by persons who have duties on the premises which are or could be affected by the matters set out in the permit and these rules.

## 2.4 Accumulation of radioactive waste

- 2.4.1 There shall be no accumulation of radioactive waste except of the types of radioactive waste specified in Table 2.
- 2.4.2 The limits on accumulation given in Table 2 shall not be exceeded.

<b>Table 2: Accumulation of radioactive waste</b>			
<b>Waste type</b>	<b>Radionuclide or group of radionuclides permitted to be present in the waste</b>	<b>Limit on activity on the premises at any one time</b>	<b>Maximum period for retention of waste</b>
Aqueous radioactive waste	Radionuclides arising from the permitted NORM industrial activities <sup>1</sup>	30 MBq Ra 226 <sup>2</sup> 30 MBq Ra 228 <sup>2</sup>	3 months
Solid radioactive waste	Radionuclides arising from the permitted NORM industrial activities <sup>1</sup>	None specified	3 months

[1] Radionuclides as listed in table 1 of Schedule 23 to the 2010 Environmental Protection (England and Wales) Regulations [as amended by SI 2011 no 2043].

[2] Limits apply to the specified radionuclides only and do not include the decay products.

2.4.3 The operator shall maintain records of radioactive waste showing:

- (a) the radionuclide present, the date on which accumulation began and the activity on that date;
- (b) so far as is reasonably practicable its location on the premises;
- (c) if it has been removed from the premises, the date of removal, the activity on that date and the name and address of the person to whom it was transferred; and
- (d) the total activity and volume of radioactive waste present on the premises.

## 3 – Disposals of radioactive waste and monitoring

### 3.1 Disposals of radioactive waste

3.1.1 There shall be no disposals of radioactive waste except of the types of radioactive waste and by the disposal routes specified in Table 3.

3.1.2 The limits on disposals given in Table 3 shall not be exceeded.

<b>Table 3 : Disposal of radioactive waste</b>				
<b>Waste type</b>	<b>Disposal route</b>	<b>Purpose of transfer [where relevant]</b>	<b>Radionuclide or group of radionuclides permitted to be present in the waste</b>	<b>Annual activity limit</b>
Gaseous radioactive waste	A flare or vent for waste gas	Not relevant	Radionuclides arising from the permitted NORM industrial activity	None specified
Aqueous radioactive waste	Transfer to the holder of an environmental permit for the receipt and disposal of aqueous radioactive waste	For any one or more of: - treatment - onward transfer for treatment or disposal - incineration - final disposal	Radionuclides arising from the permitted NORM industrial activity.	None specified
Aqueous radioactive waste, being 1) well stimulation fluid remaining in situ, 2) water containing substances resulting from the operation of the production of oil and gas.	Disposal in the rock formation adjacent to the well bore.	Not relevant	Radionuclides arising from the permitted NORM industrial activity.	None specified
Solid radioactive waste	Transfer to the holder of an environmental permit for the receipt and disposal of LLW	For any one or more of: - treatment - onward transfer for treatment or disposal - metals recovery - final disposal	Radionuclides arising from the permitted NORM industrial activity.	None specified

- 3.1.3 The operator shall ensure that the transfer of radioactive waste:
- (a) is in accordance with the directions of the person to whom the radioactive waste is transferred that are necessary to enable that person to comply with all relevant regulatory requirements;
  - (b) is done using a suitable container constructed and maintained so as to prevent the loss of waste; and
  - (c) so far as is reasonably practicable, is not subject to delays in transit and is accepted at the premises of the person to whom the operator transfers waste.
- 3.1.4 The operator shall:
- (a) ensure that the person to whom radioactive waste is transferred receives at the time of transfer of each consignment a clear and legible note signed on the operator's behalf stating the total activity in the consignment of each radionuclide or group of radionuclides as listed in the written specification of the person to whom the radioactive waste is transferred;
  - (b) obtain a note signed on behalf of the person to whom radioactive waste is transferred, at the time of transfer, stating that the transfer has taken place; and
  - (c) keep a copy of any note issued under condition 3.1.4(a) and any note received under condition 3.1.4(b).
- 3.1.5 If required by the Environment Agency, the operator shall ensure that any consignment or part of any consignment of radioactive waste found, following transfer, not to be in accordance with these rules:
- (a) is packaged in accordance with the relevant legislation; and
  - (b) is returned as soon as is reasonably practicable to the operator's site.
- 3.1.6 The operator shall, not later than 14 days after the end of each month or within such longer period as the Environment Agency may approve in writing, record all disposals of radioactive waste made during that month.

## **3.2 Monitoring**

- 3.21 If required by the Environment Agency, the operator shall
- (a) take such samples and conduct such measurements, tests, surveys, analyses and calculations, including environmental measurements and assessments, at such times and using such methods and equipment as the Environment Agency may specify and
  - (b) keep samples, provide samples, or dispatch samples for tests at a laboratory, as the Environment Agency specifies, and ensure that the samples or residues thereof are collected from the laboratory within three months of receiving written notification that testing and repackaging in accordance with the relevant legislation are complete.
- 3.2.2 The operator shall maintain records of all monitoring required by these rules including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.
- 3.2.3 The operator shall carry out:
- (a) regular calibration, at an appropriate frequency, of systems and equipment provided for carrying out any monitoring and measurements necessary to determine compliance with these rules; and
  - (b) regular checking, at an appropriate frequency, that such systems and equipment are serviceable and correctly used.

## 4 – Information

### 4.1 Records

4.1.1 All records required to be made by these rules shall:

- (a) be legible;
- (b) be made as soon as reasonably practicable;
- (c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and
- (d) be retained until notified in writing by the Environment Agency that records no longer need to be retained.

4.1.2 The operator shall keep on site all records, plans and the management system required by these rules, unless otherwise agreed in writing by the Environment Agency.

### 4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by these rules to the Environment Agency using the contact details supplied in writing by the Environment Agency.

4.2.2 The operator shall supply such information in relation to:

- (a) the disposals of radioactive waste; and
- (b) the samples, tests, surveys, analysis and calculations, environmental monitoring and assessments undertaken under condition 3.2.1;

in such format and within such timescales as the Environment Agency may specify in writing.

### 4.3 Notifications

4.3.1 The Environment Agency shall be notified without delay following the detection of:

- (a) any malfunction, breakdown or failure of equipment or techniques or accident, which has caused, is causing or may cause significant pollution or may generate significant amounts of radioactive waste;
- (b) the breach of a limit specified in these rules; or
- (c) any significant adverse environmental effects; or
- (d) any escape of accumulated radioactive waste.

4.3.2 Written confirmation of actual or potential pollution incidents and breaches of limits shall be submitted within 24 hours.

4.3.3 The Environment Agency shall be notified in writing, at least 21 days in advance or, where this is not possible, without delay, of the operator's intention to cease to accumulate or dispose of radioactive waste.

4.3.4 The Environment Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:

- (a) Where the operator is a registered company:
  - i. any change in the operator's trading name, registered name or registered office address; and
  - ii. any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.

- (b) Where the operator is a corporate body other than a registered company:
  - i. any change in the operator's name or address; and
  - ii. any steps taken with a view to the dissolution of the operator.
- (c) In any other case:
  - i. the death of any of the named operators (where the operator consists of more than one named individual); and
  - ii. any steps taken with a view to the operator, or any one of them, going into bankruptcy, entering into a composition or arrangement with creditors, or, in the case of them being in a partnership, dissolving the partnership.

4.3.5 If the operator believes or has reasonable grounds for believing that radioactive waste has been lost or stolen he shall:

- (a) without delay inform the Police and the Environment Agency;
- (b) make all reasonable efforts to recover that radioactive waste; and
- (c) as soon as is practicable report the circumstances in writing to the Environment Agency.

## 4.4 Interpretation

4.4.1 In these rules, except where otherwise specified, words and expressions defined in the "regulations" in relation to radioactive substances regulation shall have the same meanings when used in the rules as they have in the regulations..

*"activity"*, expressed in becquerels, means the number of spontaneous nuclear transformations occurring in a period of one second.

*"annual activity limit"* means the limit over a calendar year.

*"aqueous waste"* means radioactive waste in the form of a continuous aqueous phase together with any entrained solids, gases and non-aqueous liquids.

*"best available techniques"* means the latest stage of development (state of the art) of processes, of facilities or of methods of operation which indicate the practical suitability of a particular measure for limiting discharges, emissions and waste. In determining whether a set of processes, facilities and methods of operation constitute the best available techniques in general or individual cases, special consideration shall be given to:

- (a) comparable processes, facilities or methods of operation which have recently been successfully tried out;
- (b) technological advances and changes in scientific knowledge and understanding;
- (c) the economic feasibility of such techniques;
- (d) time limits for installation in both new and existing plants; and
- (e) the nature and volume of the discharges and emissions concerned.

*"environment"* means all, or any, of the media of air, water (to include sewers and drains) and land.

*"environmental permit"* means a permit granted under the Environmental Permitting Regulations.

*"Environmental Permitting Regulations"* means The Environmental Permitting (England and Wales) Regulations 2010 [as amended].

*"gaseous waste"* means radioactive waste in the form of gases and associated mists and particulate matter.

*“packaging”* includes any sack, drum, container or wrapping.

*“radioactive waste adviser”* means, subject to the transitional arrangements in the Agencies' Scheme for Radioactive Waste Advisors (“the Scheme”), either an individual certified under the Scheme and appointed in writing by the operator, or those individuals advising the operator under the operators arrangements for “corporate radioactive waste advisor” as approved under the Scheme. The Scheme is published at:

[http://www.sepa.org.uk/radioactive\\_substances/radioactive\\_waste\\_advisers.aspx](http://www.sepa.org.uk/radioactive_substances/radioactive_waste_advisers.aspx)

*“samples”* includes samples that have been prepared or treated to enable measurements of activity to be made.

*“techniques”* include both the technology used and the way in which the installation is designed, built, maintained, operated and dismantled.

- 4.4.2 In these rules references to reports and notifications mean written reports and notifications, except where reference is made to notification being made “without delay”, in which case it may be provided by telephone.