

## Draft standard rules SR2009No20

# Anaerobic digestion facility including use of the resultant biogas

### Introductory note

This introductory note does not form part of these standard rules

When referred to in an environmental permit, these rules will allow the operator to carry out anaerobic digestion of wastes and also use of the biogas in compression and spark ignition engines with a rated thermal input of up to 3 megawatts.

Permitted wastes do not include hazardous wastes. The total quantity of waste that can be accepted at any site under these rules must not exceed 75,000 tonnes per year. Any wastes controlled by the Animal By-Products Regulations<sup>1</sup> must be treated and handled in accordance with any requirements imposed by those Regulations.

The permitted activities must not be carried out within 500 metres of a European Site<sup>2</sup>, Ramsar site or a Site of Special Scientific Interest (SSSI) (excluding any SSSI designated solely for geological features). The permitted activities must not be carried out within 250 metres of any off-site building used by the public, including dwelling houses or within a specified Air Quality Management Area (AQMA)<sup>3</sup>. The activities must be outside groundwater Source Protection Zone 1. All storage and treatment of waste solids, liquids and sludges shall also not be within:

- 10 metres of any watercourse
- 50 metres from any spring or well, or from any borehole not used to supply water for domestic or food production purposes, and
- 250 metres from any water abstraction point or borehole used to supply water for domestic or food production purposes.

These rules do not allow any emission into surface waters or groundwater except clean water from roofs and parts of the site not used for the waste activity including storage of wastes. However, under the fugitive emissions of substances rule, biogas condensate may be discharged into a sealed drainage system.

### End of Introductory Note

---

<sup>1</sup> The Animal By-Products Regulations 2005 (SI No. 2347) and the Animals By-Products (Wales) Regulations 2006 (SI No. 1293, W.127)

<sup>2</sup> A candidate or Special Area of Conservation (cSAC or SAC) and proposed or Special Protection Area (pSPA or SPA) in England and Wales.

<sup>3</sup> An Air Quality Management Area which has been designated due to concerns about oxides of nitrogen.

# Rules

## 1 – Management

### 1.1 General management

- 1.1.1 The activities shall be managed and operated:
- (a) in accordance with a management system, which identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances and closure and those drawn to the attention of the operator as a result of complaints; and
  - (b) by sufficient persons who are competent in respect of the responsibilities to be undertaken by them in connection with the operation of the activities.
- 1.1.2 Records demonstrating compliance with rule 1.1.1 shall be maintained.
- 1.1.3 Any persons having duties that are or may be affected by the matters set out in these standard rules shall have convenient access to a copy of it kept at or near the place where those duties are carried out.
- 1.1.4 The operator shall comply with the requirements of an approved competence scheme.

### 1.2 Accident management plan

- 1.2.1 The operator shall:
- (a) maintain and implement an accident management plan;
  - (b) review and record at least every 4 years or as soon as practicable after an accident, (whichever is the earlier) whether changes to the plan should be made;
  - (c) make any appropriate changes to the plan identified by a review.

## 2 – Operations

### 2.1 Permitted activities

- 2.1.1 The operator is authorised to carry out the activities specified in table 2.1 below ("the activities").

<b>Table 2.1 Activities</b>	
<b>Description of activities</b>	<b>Limits of activities</b>
<p><b>R13:</b> Storage of wastes pending the operations numbered R1, R2 and D10</p> <p><b>R2:</b> Recycling or reclamation of organic substances that are not used as solvents</p>	<p>Treatment of waste including shredding, sorting, screening, compaction, baling, mixing and maceration.</p> <p>Digestion of wastes including pasteurisation and chemical addition</p> <p>Gas cleaning by biological or chemical scrubbing.</p> <p>Gas storage and drying</p> <p>Treatment of digestate including screening to remove plastic residues, centrifuge or pressing, addition of thickening agents (polymers) or drying.</p> <p>Composting and maturation of digestate</p> <p>The maximum throughput of animal wastes shall be &lt;10 tonnes per day.</p> <p>The total quantity of waste accepted at the site shall be less than 75,000 tonnes a year.</p>
<p><b>R1:</b> Use principally as a fuel or other means to generate energy.</p>	<p>The use of combustible gases produced as a by-product of the anaerobic digestion process as fuel.</p> <p>Except for the auxiliary flare, the aggregate rated thermal input of all appliances used to burn biogas shall be less than 3 megawatts.</p>
<p><b>D10:</b> Incineration on land</p>	<p>Use of an auxiliary flare required only for periods of breakdown or maintenance of the combined heat and power unit.</p>

- 2.1.2 All process plant and equipment shall be commissioned, operated and maintained, and shall be fully documented and recorded, in accordance with the manufacturers recommendations.

## 2.2 The site

- 2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan attached to the permit.
- 2.2.2 The activities shall not be carried out within:
- (a) 500 metres of a European Site or a SSSI;
  - (b) 250 metres of any off-site building used by the public, including dwelling houses;
  - (c) a specified AQMA;
  - (d) groundwater Source Protection Zone 1.

## 2.3 Waste acceptance

2.3.1 Waste shall only be accepted if:

- (a) it is of a type and quantity listed in tables 2.1 and 2.3 of these rules; and;
- (b) it conforms to the description in the documentation supplied by the producer and holder.

2.3.2 Records demonstrating compliance with rule 2.3.1 shall be maintained.

<b>Table 2.3 Waste types</b>	
<b>Waste Code</b>	<b>Description</b>
<b>02</b>	<b>WASTES FROM AGRICULTURE, HORTICULTURE, AQUACULTURE, FORESTRY, HUNTING AND FISHING, FOOD PREPARATION AND PROCESSING</b>
<b>02 01</b>	<b>wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing</b>
02 01 01	sludges from washing and cleaning – food processing waste, food washing waste
02 01 02	animal tissue waste – Category 3 animal by-products (ABP) including blood, animal flesh, fish processing waste, fish carcasses, poultry waste – Category 2 ABP – paunch contents
02 01 03	plant tissue waste - husks, cereal dust, waste animal feeds
02 01 06	animal faeces, urine, manure including spoiled straw
02 01 07	wastes from forestry
02 01 99	residues from commercial mushroom cultivation
<b>02 02</b>	<b>wastes from the preparation and processing of meat, fish and other foods of animal origin</b>
02 02 01	sludges from washing and cleaning – process water, – food washing waste
02 02 02	animal tissue waste – Category 3 ABP including blood, animal flesh, fish processing waste, fish carcasses, poultry waste
02 02 03	materials unsuitable for consumption or processing – Coffee, food processing waste, jam, kitchen waste, fruit, vegetable oil, tobacco, tea, vegetable waste – waste fat from processing of meat or fish
02 02 99	non specified* – Sludges from gelatine production – animal gut contents
<b>02 03</b>	<b>wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production, molasses preparation and fermentation</b>
02 03 02	sludges from washing, cleaning peeling, centrifuging and separation – Coffee, mushroom compost, food processing waste, food washing waste, tobacco
02 03 04	biodegradable materials unsuitable for consumption or processing (other than those containing dangerous substances)
02 03 05	effluent from the processes referred to in sources of waste
02 03 99	non specified* – Sludge from production of edible fats and oils – Seasoning residues, Molasses residues, – Residues from production of potato, corn or rice starch
<b>02 04</b>	<b>wastes from sugar processing</b>
02 04 03	sludges from on-site effluent treatment – biological sludge
02 04 99	other biodegradable wastes
<b>02 05</b>	<b>wastes from the dairy products industry</b>
02 05 01	biodegradable materials unsuitable for consumption or processing (other than those containing dangerous substances) – Solid and liquid dairy products, milk, food processing wastes, yoghurt, whey
02 05 02	sludges from on-site effluent treatment
<b>02 06</b>	<b>wastes from the baking and confectionery industry</b>
02 06 01	biodegradable materials unsuitable for consumption or processing (other than those containing dangerous substances) - food condemned, food processing wastes, biscuits, chocolate, yeast, bread, bakery wastes
02 06 03	sludges from on-site effluent treatment

<b>02 07</b>	<b>wastes from the production of alcoholic and non-alcoholic beverages (except coffee, tea and cocoa)</b>
02 07 01	wastes from washing, cleaning and mechanical reduction of raw materials– brewing waste, food processing waste, fermentation waste
02 07 02	wastes from spirits distillation - – spent grains, fruit and potato pulp – sludge from distilleries
02 07 04	biodegradable materials unsuitable for consumption or processing (other than those containing dangerous substances) - brewing waste, food processing waste, fermentation waste, beer, alcoholic drinks, fruit juice
02 07 99	spent grains, hops and Whisky filter sheets/ cloths.
<b>03</b>	<b>WASTES FROM WOOD PROCESSING AND THE PRODUCTION OF PANELS AND FURNITURE, PULP, PAPER AND CARBOARD</b>
<b>03 03</b>	<b>wastes from pulp, paper and cardboard production and processing</b>
03 03 02	green liquor sludge – paper sludge, green liquor
03 03 08	wastes from sorting of paper and cardboard destined for recycling – cardboard, newspaper, tissues, paper
03 03 10	fibre rejects and sludges – paper pulp (de-inked only), paper fibre
<b>04</b>	<b>WASTES FROM THE LEATHER, FUR AND TEXTILE INDUSTRIES</b>
<b>04 01</b>	<b>Wastes from the leather and fur industry</b>
04 01 01	fleshings and lime split wastes
04 01 05	tanning liquor free of chromium
04 01 07	sludges not containing chromium
<b>04 02</b>	<b>waste from the textile industry</b>
04 02 10	organic matter from natural products, e.g. grease, wax
<b>07</b>	<b>WASTES FROM ORGANIC CHEMICAL PROCESSES</b>
<b>07 02</b>	<b>wastes from the manufacture, formulation, supply and use of plastics, synthetic rubber and man-made fibres</b>
07 02 13	waste plastic - must conform to BS EN 13432
<b>15</b>	<b>WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FLITER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED</b>
<b>15 01</b>	<b>waste packaging, absorbents, filter materials, wiping cloths and protective clothing</b>
15 01 01	paper and cardboard packaging - must conform to BS EN 13432 - no manmade substances.
15 01 02	plastic packaging - must conform to BS EN 13432
15 01 03	wooden packaging
15 01 05	composite packaging - must conform to BS EN 13432
<b>19</b>	<b>WASTE FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE</b>
<b>19 02</b>	<b>wastes from physiochemical treatments of waste</b>
19 02 09	glycerol
19 02 10	combustible wastes
<b>19 05</b>	<b>wastes from the aerobic treatment of solid wastes</b>
19 05 01	non composted fraction of municipal and similar wastes
19 05 02	non composted fraction of animal and vegetable wastes
19 05 03	off-specification compost from source segregated biodegradable waste
<b>19 06</b>	<b>waste from anaerobic treatment of waste</b>
19 06 03	Liquor from anaerobic treatment of municipal waste
19 06 04	digestate from anaerobic treatment of source segregated biodegradable waste
19 06 05	liquor from anaerobic treatment of animal and vegetable waste
19 06 06	digestate from anaerobic treatment of animal and vegetable waste
<b>19 08</b>	<b>wastes from wastewater treatment works</b>
19 08 09	grease and oil mixture containing only edible oils and fats
19 0812	sludge from industrial biological treatment

<b>20</b>	<b>MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS</b>
<b>20 01</b>	<b>municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions</b>
20 01 01	paper and cardboard
20 01 08	biodegradable kitchen and canteen waste
20 01 25	edible oil and fat
<b>20 02</b>	<b>garden and park wastes (including cemetery waste)</b>
20 02 01	biodegradable waste – animal faeces, manure, garden waste, green waste, horticultural waste, plant tissue, parks and garden waste, hedge and tree trimmings, grass cuttings and leafy materials
<b>20 03</b>	<b>other municipal wastes</b>
20 03 01	mixed municipal waste – separately collected biowastes
20 03 02	wastes from markets - markets – allowed only if source segregated biodegradable fractions. E.g plant material, fruit and vegetables.

## 3 – Emissions and monitoring

### 3.1 Emissions to air, water or land

3.1.1 There shall be no point source emissions to air, water or land, except from the sources and emission points listed in table 3.1

3.1.2 The limits given in table 3.1 shall not be exceeded.

Table 3.1 Point source emissions to air - emission limits and monitoring requirements			
Emission Point and Source	Parameter	Limit (including units)	Monitoring Frequency and Standard or Method
Stacks on engines	Oxides of Nitrogen	500 mg/m <sup>3</sup>	Annual monitoring  Monitoring equipment, techniques, personnel and organisations employed for the engine stack emissions monitoring programme (including the measurement of exhaust gas temperature) shall have either MCERTS certification or MCERTS accreditation (as appropriate).
	Carbon monoxide	1400 mg/m <sup>3</sup>	
	Suphur dioxide	350 mg/m <sup>3</sup>	
	Total volatile organic compounds including methane	1750 mg/m <sup>3</sup>	
	Non methane volatile organic compounds	150 mg/m <sup>3</sup> Emission levels at Normal Temperature and Pressure and 5%O2, unless otherwise agreed by the Agency	
Exhausts from engines	Temperature	Gas engine exhaust gas temperature where the exhaust leaves the engine shall be no less than 200 degrees C.	
Stacks on boilers burning biogas	Oxides of Nitrogen Carbon monoxide	No limit set No limit set	None specified
Auxiliary flare	Oxides of Nitrogen Carbon monoxide	No limit set No limit set	None specified
Pressure relief valves	Biogas	No limit set	None specified

## 3.2 Fugitive emissions of substances

- 3.2.1 Fugitive emissions of substances (excluding odour, noise and vibration) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to those specified in Table 3.2 below and any approved fugitive emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.

**Table 3.2 Appropriate measures for fugitive emissions**

Measures
1) All storage and treatment of waste solids, liquids and sludges shall comply with the following distances: 10 metres of any watercourse 50 metres from any spring or well, or from any borehole not used to supply water for domestic or food production purposes, and 250 metres from any borehole used to supply water for domestic or food production purposes.
2) All waste solids, liquids and sludges shall be stored on an impermeable surface with a sealed drainage system.
3) Digesters shall be located on an impermeable surface (a permeability of at least 10 <sup>-9</sup> m/s) with sealed construction joints within a bunded area. The bunded area shall have a capacity at least 110% of the largest vessel or 25% of the total tankage volume, whichever is the greater. Bunds shall be regularly inspected to ensure that bunds filled by rainwater are regularly emptied. Connections and fill points should be within the bunded area and no pipework should penetrate the bund wall.
4) Digestate shall be stored within covered containers or covered lagoons and should be of a design and capacity fit for purpose. Lagoons shall have a free board of ¼ capacity.
5) Gas engine stack height shall be no less than 3 metres.
6) All biogas condensate shall be discharged into a sealed drainage system.
7) Fugitive emissions of unburned biogas and the operation of the auxiliary flare shall be minimised. Any significant fugitive emissions of unburned biogas (including the operation of the pressure relief valves associated with biogas storage) and the operation of the auxiliary flare shall be recorded.

- 3.2.2 The operator shall:
- (a) if notified by the Agency that the activities are giving rise to pollution, submit to the Agency for approval within the period specified, a fugitive emissions management plan;
  - (b) implement the approved fugitive emissions management plan, from the date of approval, unless otherwise agreed in writing by the Agency.
- 3.2.3 All liquids, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise leakage and spillage from the primary container.

## 3.3 Odour

- 3.3.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable, to minimise, the odour.
- 3.3.2 The operator shall:

- (a) as part of the management system have in place an odour management plan to prevent and minimise the effects of potentially odorous wastes
- (b) implement the odour management plan when treating the land with potentially odorous wastes

### **3.4 Noise and vibration**

- 3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan, to prevent or where that is not practicable, to minimise, the noise and vibration.
- 3.4.2 The operator shall:
  - (a) if notified by the Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Agency for approval within the period specified, a noise and vibration management plan;
  - (b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Agency.

### **3.5 Monitoring**

- 3.5.1 The operator shall , unless otherwise agreed in writing by the Agency, undertake the monitoring specified in table 3.1.
- 3.5.2 The operator shall maintain records of all monitoring required by these standard rules including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, test and surveys and any assessment or evaluation made on the basis of such data.

## **4 – Information**

### **4.1 Records**

- 4.1.1 All records required to be made by these standard 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, unless otherwise agreed by the Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:
    - (i) off-site environmental effects; and
    - (ii) matters which affect the condition of land and groundwater
- 4.1.2 All records, plans and the management system required to be maintained by these standard rules shall be held on the site, where practicable or other location agreed in writing and controlled by the operator.

### **4.2 Reporting**

- 4.2.1 All reports and notifications required by these standard rules shall be sent to the Agency using the contact details supplied in writing by the Agency.
- 4.2.2 Within one month of the end of each quarter, the operator shall submit to the Agency using the form made available for the purpose, the information specified on the form relating to the site and the



waste accepted and removed from it during the previous quarter.

## 4.3 Notifications

- 4.3.1 The Agency shall be notified without delay following the detection of:
- (a) any malfunction, breakdown or failure of equipment or techniques, accident or fugitive emission which has caused, is causing or may cause significant pollution;
  - (b) the breach of a limit specified in these standard rules; or
  - (c) any significant adverse environmental effects.
- 4.3.2 Written confirmation of actual or potential pollution incidents and breaches of emission limits shall be submitted within 24 hours.
- 4.3.3 The 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:
    - any change in the operator's trading name, registered name or registered office address; and
    - 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:
    - any change in the operator's name or address; and
    - any steps taken with a view to the dissolution of the operator.
  - c) In any other case:
    - the death of any of the named operators (where the operator consists of more than one named individual); and
    - 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 them being in a partnership, dissolving the partnership.

## 4.4 Interpretation

- 4.4.1 In these standard rules the expressions listed below shall have the meaning given.
- 4.4.2 In these standard rules references to reports and notifications mean written reports and notifications, except when reference is being made to notification being made "without delay", in which case it may be provided by telephone.

*"accident"* means an accident that may result in pollution.

*"anaerobic digestion"* means a process of controlled decomposition of biodegradable materials under managed conditions where free oxygen is absent, at temperatures suitable for naturally occurring mesophilic or thermophilic anaerobe and facultative anaerobe bacteria species, which convert the inputs to a methane-rich biogas and whole digestate.

*"authorised officer"* means any person authorised by the Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in Section 108(4) of that Act.

*"D"* means a disposal operation provided for in Annex IIA to Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on Waste.

*"digestate:"* means material resulting from an anaerobic digestion process.

*"emissions to land"*, include emissions to groundwater.

*"European Site"* means candidate or Special Area of Conservation (cSAC or SAC) and proposed or Special Protection Area (pSPA or SPA) in England and Wales, within the meaning of Council Directives 79/409/EEC on the conservation of wild birds and 92/43/EEC on the conservation of natural habitats and of wild flora and fauna under The Conservation (Natural Habitats & c.) Regulations 1994. Internationally designated Ramsar sites are dealt with in the same way as European Sites as a matter of government policy and for the purpose of these rules will be considered as a European Site.

*"fugitive emission"* means an emission to air, water or land from the activities from a localised or diffuse source which is not controlled by an emission limit.

*“groundwater”* means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

*“groundwater Source Protection Zone”* has the meaning given in the document titled “Groundwater Protection: Policy and Practice” published by the Agency in 2006.

*“impermeable surface”* means a surface or pavement constructed and maintained to a standard sufficient to prevent the transmission of liquids beyond the pavement surface, and should be read in conjunction with the term “sealed drainage system” (below).

*“MCERTS”* means the monitoring certification scheme established by the Environment Agency to deliver high quality environmental measurements, including a performance standard for the chemical testing of soil samples.

*“pollution”* means emissions as a result of human activity which may—

- (a) be harmful to human health or the quality of the environment,
- (b) cause offence to a human sense,
- (c) result in damage to material property, or
- (d) impair or interfere with amenities and other legitimate uses of the environment.

*“quarter”* means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

*“R”* means a recovery operation provided for in Annex IIB to Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on Waste.

*“sealed drainage system”* in relation to an impermeable surface, means a drainage system with impermeable components which does not leak and which will ensure that:

- (a) no liquid will run off the surface otherwise than via the system;
- (b) except where they may lawfully be discharged, all liquids entering the system are collected in a sealed sump.

*“secure storage”* means storage where waste cannot escape and members of the public do not have access to it.

*“site”* means the location where waste storage and treatment activities can take place.

*“specified AQMA”* means an air quality management area within the meaning of the Environment Act 1995 which has been designated due to concerns about oxides of nitrogen.

*“SSSI”* means Site of Special Scientific Interest within the meaning of the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000).

*“year”* means calendar year commencing on 1<sup>st</sup> January.

## **End of standard rules**