Draft generic risk assessment for draft standard rules set number SR2009No21

Standard Facility: Waste operation: On farm anaerobic digestion facility including use of the resultant biogas

Location: Applies to all potential locations.

Risk assessment carried out by: Environment Agency

Date: 01-Feb-09

The scope of the permit and associated rules is defined by the following risk criteria:

Parameter 1	Permitted activities - The storage and recovery of waste (R13, R1, R2) and incineration (D10).
Parameter 2	Permitted wastes - manures and slurries suitable for digestion.
Parameter 3	Except for the auxiliary flare, the aggregate rated thermal input of all appliances used to burn biogas must be less than 3 megawatts.
Parameter 4	Maximum quantity of waste shall be limited to 75,000 tonnes per year
Parameter 5	No point source discharges to controlled waters or groundwater
Parameter 6	The activities must not be carried out within 500 metres of a European Site or a Site of Special Scientific Interest (SSSI).
Parameter 7	The activities must not be carried out within 200 metres of any off-site building used by the public, including dwelling houses.
Parameter 8	The activities must not be carried out within an Air Quality Management Area (AQMA) designated for NOx.
Parameter 9	The activities must not be carried out with groundwater source protection zone 1
Abbreviations:	SR - Standard Rule NOx - Oxides of nitrogen CO - Carbon Monoxide CHP - Combined heat and power SR (fugitive emissions) - fugitive emissions of substances .... shall not cause pollution…., with appropriate measures: gas engine stack height shall be no less than 3 metres; all biogas condensate shall be discharged into a sealed drainage system; fugitive emissions of biogas shall be prevented.

Data and information				Judgement				Action (by permitting)	
Receptor	**Source**	**Harm**	**Pathway**	**Probability of exposure**	**Consequence**	**Magnitude of risk**	**Justification for magnitude**	**Risk management**	**Residual risk**
What is at risk? What do I wish to protect?	**What is the agent or process with potential to cause harm?**	**What are the harmful consequences if things go wrong?**	**How might the receptor come into contact with the source?**	**How likely is this contact?**	**How severe will the consequences be if this occurs?**	**What is the overall magnitude of the risk?**	**On what did I base my judgement?**	**How can I best manage the risk to reduce the magnitude?**	**What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).**
Local human population	Releases of NOx	Harm to human health - respiratory irritation and illness.	Air transport then inhalation	Low	Medium	**Medium**	There is potential for exposure to anyone living close to the site or at locations where members of the public might be regularly exposed.	SR - activities shall be managed and operated in accordance with a management system (will include inspection and maintenance of equipment, including engine management systems), SR - point source emissions to air with emission limits for NOx. SR - activities shall not be carried out within 200 metres of any off-site building used by the public, including dwelling houses. SR - the activities shall not be carried out within an AQMA designated for NOx.	Low

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Local human population	Releases of CO	Harm to human health - respiratory irritation and illness.	Air transport then inhalation	Low	Medium	**Low**	Monitoring of CO levels in biogas driven CHP plants has shown CO to be typically present at below benchmark levels as indicated in Agency Guidance LFTGN08.	As above and SR - point source emissions to air with emission limits for CO.	Low
Local human population	Release of microorganisms (bioaerosols)	Harm to human health - respiratory irritation and illness.	Air transport then inhalation	Medium	High	**Medium**	Potential for release at waste reception/treatment and maturation	SR require activities not to be carried out within 200 metres of any off site building used by the public including dwellings/houses.	
Local human population	Odour	Nuisance, loss of amenity	Air transport then inhalation.	Medium	Medium	**Medium**	Local residents often sensitive to odour.	SR - emissions shall be free from odour…. SR - (if required) - odour management plan, SR (fugitive emissions)…. With appropriate measures: fugitive emissions of biogas shall be minimised.	Low
Local human population	Noise and vibration	Nuisance, loss of amenity, loss of sleep.	Noise through the air and vibration through the ground.	Low	Low	**Low**	Local residents often sensitive to noise and vibration but there is low potential for exposure.	SR - emissions shall be free from noise and vibration..... SR (if required) - noise and vibration management plan.	Low

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Local human population and / or livestock after gaining unauthorised access to the installation	All on-site hazards: machinery.	Bodily injury	Direct physical contact	Low	Medium	**Low**	Direct physical contact is minimised by activity being carried out within enclosed digesters so a low magnitude risk is estimated.	SR - activities shall be managed and operated in accordance with a management system (will include site security measures to prevent unauthorised access).	Low
Local human population and local environment.	Arson and / or vandalism causing the release of polluting materials to air (smoke or fumes), water or land.	Respiratory irritation, illness and nuisance to local population. Injury to staff, fire fighters or arsonists/vandals. Pollution of water or land.	Air transport of smoke. Spillages and contaminated firewater by direct run-off from site and via surface water drains and ditches.	Medium	High	**Medium**	Although biogas is flammable, risk of direct physical contact is reduced by activity being carried out within enclosed systems	As above. SR - accident management plan (will include fire and spillages).	Low
Local human population and local environment	Accidental fire causing the release of polluting materials to air (smoke or fumes), water or land.	Respiratory irritation, illness and nuisance to local population. Injury to staff or fire fighters. Pollution of water or land.	As above.	Low	Medium	**Medium**	Risk of accidental combustion of waste is moderate.	As above	Low
All surface waters close to and downstream of site.	Spillage of liquids, including oil.	Acute effects: fish kill	Direct run-off from site across ground surface, via surface water drains, ditches etc.	Low	Medium	**Low**	Potential for spillage from digestions tanks and storage vessels.	SR - Digestion tanks built to appropriate standard. SR - no point source emissions to water. Run off restricted by SR on fugitive emissions of substances…. with appropriate measures: all biogas condensate shall be discharged into a sealed drainage system. Impervious surface required for storage of all wastes.	Low

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All surface waters close to and downstream of site.	As above	Chronic effects: deterioration of water quality	As above. Indirect run-off via the soil layer	Low	Medium	**Low**	As above	As above	Low
Abstraction from watercourse downstream of facility (for agricultural or potable use).	As above	Acute effects, closure of abstraction intakes.	Direct run-off from site across ground surface, via surface water drains, ditches etc. then abstraction.	Low	Medium	**Low**	Watercourse must have medium / high flow for abstraction to be permitted, which will dilute contaminated run-off.	As above	Low
Groundwater	As above	Chronic effects: contamination of groundwater, requiring treatment of water or closure of borehole.	Transport through soil/groundwater then extraction at borehole.	Low	Medium	**Low**	Potential for spillage from digestions tanks and storage vessels.	As above.Activities cannot take place within groundwater source protection zone 1.	Low
Protected nature conservation sites - European sites and SSSIs	Any, but principally NOx.	Harm to protected site through toxic contamination, nutrient enrichment, disturbance etc.	Any	Low	Medium	**Low**	Emissions to air may cause harm to and deterioration of nature conservation sites.	At 500 metres or above, the potential hazards from the permitted activities pose a low risk to the broad sensitivity of species and habitats groups. The standard permit only applies at this distance or more. It is also a requirement of an SR.	Low