

Licensing of Anaerobic Digestion Plants

Background

Anaerobic digestion (AD) is a managed biological process in which biodegradable waste is broken down by naturally occurring micro-organisms in the absence of oxygen to produce a stabilised residue, commonly called “digestate”, which is rich in nutrients such as nitrogen, phosphorus and other elements required for healthy plant growth and fertile soil.

AD also provides a source of renewable energy, since the waste is broken down to produce biogas (a mixture of methane and carbon dioxide), which is suitable for energy production. The biogas can be used to generate electricity and heat to power on-site equipment and the excess electricity can be exported to the National Grid. Other possible uses for the biogas currently under development in the UK include injection to the gas grid and using it as a vehicle fuel.

The process has the potential to harm the environment or human health if mismanaged due to the production of biogas (a powerful greenhouse gas) and the potential to cause nuisance through odour. Therefore anaerobic digestion of waste is controlled under either the Waste Management Licensing (Scotland) Regulations 2011 (WMLR) or the Pollution Prevention and Control (Scotland) Regulations 2012 (PPCR).

This paper sets out how SEPA will regulate the activity of AD in the context of waste regulatory controls. Existing controls imposed by other regimes, such as those relating to the protection of the water environment, will still apply. This paper replaces our previously issued position statement on the licensing of AD plants. SEPA has also updated the position statement relating to the use of digestates (including PAS110 digestate) which can be found on our [website](#)¹.

Principal Question: Are the Inputs Waste?

The first factor that determines the most applicable regulatory regime is whether the inputs to the process are waste or not. “Is It Waste” guidance is available on the SEPA website². Typical inputs to an AD plant could include manure and slurry³, vegetable waste and crops (including specially grown energy crops), domestic and commercial food waste, green waste, waste animal feed, dairy washings, silage waste and effluent.

If the inputs are not waste, e.g. they are specially grown energy crops such as maize and millet, the process is not regulated under waste controls (WMLR). Other factors such as the size of the gas engines will determine if the process falls within the combustion activities controlled under the PPC regime. Further information on PPC is available on the SEPA [website](#)⁴.

How are the activities regulated?

Appendix 1 contains a flowchart showing the legislative controls applicable to AD. It should be noted that where the activity triggers the thresholds of the PPC regime then authorisation must be obtained under that regime regardless of the fact that it may have otherwise been able to have been carried out under a waste management licence, or exemption from licensing. For example, if a distillery AD plant has a gas engine exceeding 50MW, the process will be regulated under PPC (A) 1.1.

An AD process may also be a directly associated activity of another prescribed PPC activity. In this case, the necessary controls would be implemented through the existing PPC Permit.

¹ http://www.sepa.org.uk/waste/waste_regulation/guidance_position_statements.aspx

² http://www.sepa.org.uk/waste/waste_regulation/guidance_position_statements.aspx

³ Slurry is defined in the Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) (Scotland) Regulations 2003 as a mixture consisting wholly of or containing excreta, bedding, feed residues, rainwater and washings from a building or yard used by livestock, dungsteeds or middens, high level slatted buildings and weeping wall structures, or any combination of these, provided such excreta is present. The PEPFAA code states that drainage from parlour standings and the parlour pit must be collected and contained and that this may be included in the slurry system. These washings may contain milk residues, excreta and cleaning chemicals.

⁴ http://www.sepa.org.uk/air/process_industry_regulation/pollution_prevention_control.aspx

When does waste management licensing or PPC permitting apply?

The determination of whether an AD plant requires a waste management licence or PPC permit depends upon:

- the type and quantity of material it uses as feedstock, and
- whether the activity is a prescribed process within Schedule 1 of the PPCR.

A PPC permit will be required where:

- The process has a gas engine with net rated thermal input greater than 20MW (Section 1.1 of PPCR)
- The process involves the disposal or recycling of animal carcasses and animal waste (including catering waste)⁵ either separately or in conjunction with manures, slurry and silage effluent and the capacity⁶ exceeds 10 tonnes per day (Section 6.8 of PPCR).
- The process involves the disposal of any waste in a process with a capacity greater than 50 tonnes per day or the recycling of any waste in a process with a capacity greater than 100 tonnes per day (Section 5.4 PPCR).

A Waste Management Licence will be required where:

- The process involves the disposal or recycling of animal carcasses and animal waste (including catering waste), either separately or in conjunction with manures, slurry and silage effluent and the capacity of the digestion tank is less than 10 tonnes per day.
- The process does not treat animal carcasses or animal wastes (including catering wastes) and has a capacity of less than 50 tonnes where the activity is for disposal and 100 tonnes where the activity is for recovery.

Note that **for the purpose of this guidance** manures and slurries are **not considered** as animal waste. Animal wastes are regarded as material covered by the Animal By-Products Regulation EC 1069/2009, excluding manures and slurries. Where the process accepts greater than 100 tonnes per day of wastes including manures and slurries (including mixtures with other waste or non-waste inputs) for anaerobic digestion, it will fall under PPC control.

SEPA considers catering waste to be all waste food including used cooking oil originating in restaurants, catering facilities and kitchens, including central kitchens and household kitchens.

Exemptions from Licensing

SEPA considers that agricultural manures and slurries are not waste if they are used directly on agricultural land, providing they are being used as a fertiliser or soil conditioner to meet the crop requirements of that land (i.e. the use is beneficial to the land) in accordance with the PEPFAA Code and the Four Point Plan.

However the revised Waste Framework Directive 2008/98/EC states that manures and slurries are classed as waste when treated in a composting or biogas (AD) plant. Therefore such activities are subject to waste management licensing unless an exemption from licensing applies. Schedule 1 of the WMLR lists activities which are exempt from licensing.

Paragraph 51 relates to the digestion of specified waste streams:

“51(1) The anaerobic digestion of biodegradable waste which is agricultural waste or waste from a distillery.

(2) In this paragraph, “anaerobic digestion” means the process of controlled decomposition of waste under managed conditions—

- a) where free oxygen is absent;
- b) at temperatures suitable for naturally occurring mesophilic or thermophilic anaerobe and facultative anaerobe bacteria species; and
- c) where the inputs to the process are converted to a methane rich biogas for use in an energy recovery process and to a stable sanitised material, the application of which material to land results in benefit to agriculture or horticulture or ecological improvement.”

Although there is no limit in the exemption, the PPC threshold of a capacity exceeding 100 tonnes per day will apply to the AD of agricultural and distillery wastes.

⁵ The PPC Regulations define ‘animal’ as including a bird or a fish and SEPA considers that ‘animal waste’ includes Category 2 and Category 3 animal by-products, as defined in the Animal By-Products Regulation 1069/2009. Category 1 material, whilst still being “animal waste” cannot be treated in an AD plant.

⁶ “capacity” is defined for this purpose as the maximum tonnage of waste which can be added to the digestion tank each day and is a key element of the overall plant design. It is not the total amount of material that the digestion tank can hold at any time.

Anaerobic Digestion of Agricultural Waste

“Agricultural waste” is defined in the WMLR as “waste from premises used for agriculture”. The definition of “agriculture” is taken from Section 86(3) of the Agriculture (Scotland) Act 1948, namely:

“agriculture’ includes horticulture, fruit growing, seed growing, dairy farming and livestock breeding and keeping, the use of land as grazing land, meadow land, osier land, market gardens and nursery grounds, and the use of land for woodlands where that use is ancillary to the farming of land for other agricultural purposes, and “agricultural” shall be construed accordingly”.

Commercial markets, auctions and food processing facilities do not fall within the 1948 Act definition of agriculture and SEPA considers that wastes from these facilities are not agricultural waste.

Note also that forestry waste from commercial forestry plantations does not fall under the description of “agricultural waste”.

SEPA’s interpretation of the definition of “livestock” is that it includes aquaculture and bee keeping by primary producers (not markets, auctions or processing facilities) and waste from these activities can be classed as agricultural waste.

Anaerobic Digestion of Distillery Wastes

There is no definition of “distillery wastes” in the WMLR. SEPA has interpreted this as wastes from the manufacture of alcoholic drinks by a distillation process. Waste streams likely to arise from this process include spent lees, pot ale, maltings effluent and draff.

The exemption does not allow the treatment of any wastes that are classed as special wastes as defined within the Special Waste Regulations 1996 (as amended).

As the exemption covers both agricultural and distillery wastes, it is acceptable to use either waste stream separately or both these waste streams together under the terms of this exemption. If the process accepts other wastes not arising directly from agriculture or distillery wastes, the activity will not fall under the terms of the exemption. For example the inclusion of discarded vegetables from a commercial sorting and processing plant, municipal wastes such as green waste and food waste, and commercial organic wastes such as waste from food production processes, catering wastes and abattoir wastes will mean the paragraph 51 exemption will not apply. Such processes will require either a waste management licence or a PPC permit.

This statement applies only in Scotland. The terms of this statement may be subject to periodical review and be changed or withdrawn in light of technological developments, regulatory or legislative changes, future government guidance or experience of its use. SEPA reserves its discretion to depart from the position outlined in this statement and to take appropriate action to avoid any risk of pollution or harm to human health or the environment.

Useful Links:

The Waste Management Licensing Regulations 2011, Scottish Statutory Instrument [2011:228](#)

Information on PPC: http://www.sepa.org.uk/air/process_industry_regulation/pollution_prevention_control.aspx

Information on WML: http://www.sepa.org.uk/waste/waste_regulation/application_forms/waste_management_licence.aspx

Information on Exempt Activities: http://www.sepa.org.uk/waste/waste_regulation/application_forms/exempt_activities.aspx

Appendix 1- Licensing flowchart

