

Permitting Guidance for Biomass Combustion

Purpose

To clarify which section of the [Pollution Prevention and Control \(Scotland\) Regulations 2012](#) (“PPC Regulations”) applies when considering the burning of biomass.

Background

There is increasing interest in the use of biomass as an alternative to fossil fuels. SEPA supports the move to using more sustainable sources of energy as set out in our [Energy Position Statement](#).

The combustion of ‘fuels’, which includes specifically grown energy crops, some production residues and clean recycled timber, is regulated under Section 1.1 of the PPC Regulations.

The incineration and co-incineration of ‘wastes’, which includes mixed construction and demolition and municipal wood collections, is regulated under Section 5.1 of the PPC Regulations and may also be subject to the requirements of [Chapter IV of the Industrial Emissions Directive](#) (previously the Waste Incineration Directive).

A more detailed summary of the relevant legislation is given in Appendix 1.

Note that some ‘wastes’ can ‘cease to be waste’ prior to combustion and would therefore be regulated as a ‘fuel’. This is explained further in the next sections. Conversely, some materials which would ordinarily be considered as ‘fuels’ could be discarded, for example, if burned without any energy or heat recovery to simply dispose of it and would therefore be regulated as the incineration of waste.

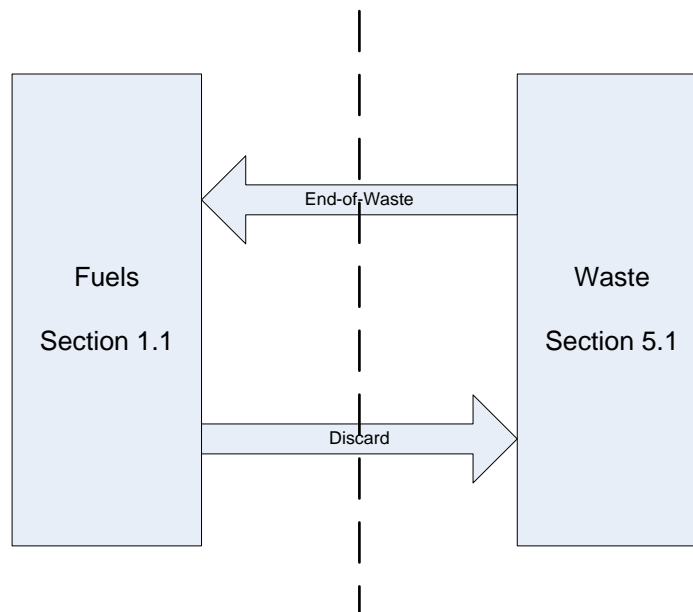


Figure 1: Fuels and Waste

Fuels – Section 1.1 Activities

In practice, SEPA will regulate energy production from the following types of biomass as the combustion of 'fuel' under Section 1.1. The list is not exhaustive and any other biomass material should be assessed on its own merits.

PPC Part A applies where the aggregated combustion capacity has a rated thermal input of 50MW or more. PPC Part B applies where a single appliance has a rated thermal input of between 20MW and 50MW. Smaller activities are regulated by Local Authority under the Clean Air Act.

Virgin Wood and Energy Crops

Forestry is the primary source of virgin wood production. Other energy crops (e.g. miscanthus) are also grown for direct use in biomass plants. Where wood or other energy crop is the main product, or one of a range of products, and is used for the production of energy in appliances with a rated thermal input of 20MW or more, the activity will be regulated as the combustion of 'fuel' under Section 1.1.

Residues from Forestry

In commercial forestry, residues arise when trees are harvested for stemwood. Poor quality or small diameter stems may be available for use as wood fuel. The tops and branches (known as brash) are normally cut off the trees and can be used as a fuel.

Where such residues are used for the production of energy in appliances with a rated thermal input of 20MW or more, the activity will be regulated as the combustion of 'fuel' under Section 1.1.

Residues from Arboriculture

Wood from arboriculture includes residues from:

- Managing municipal and private parks and gardens
- Tree surgery and pruning
- Maintaining railway and road verges.

Arboriculture residues are very similar to forestry residues, possibly including a larger proportion of brash material and less round wood, with a higher percentage of bark.

Where such residues are used for the production of energy in appliances with a rated thermal input of 20MW or more, the activity will be regulated as the combustion of 'fuel' under Section 1.1.

Agricultural Residues

Agricultural residues are commonly used in batch-fired plant in the UK, typically in systems located on farms and rural situations and also processed into pellet form for fuel.

For example, wheat, peas and oilseed rape all leave a straw residue following harvest of the grain or seed.

Where such residues are used for the production of energy in appliances with a net rated thermal input of 20MW or more, the activity will be regulated as the combustion of 'fuel' under Section 1.1.

Vegetable Residues from Industrial Processes

Some manufacturing processes produce residues which consist solely of spent plant material which is no longer suitable for use in the process. Examples include;

- Draff from whisky distillation
- Oat husks from cereals processing
- Rape meal left over from the crushing production of rapeseed oil.
- Olive cake.

Where such residues are used for the production of energy in appliances with a rated thermal input of 20MW or more, the activity will be regulated as the combustion of 'fuel' under Section 1.1.

Oversize from Composting

The use of “oversize” material in biomass plants.

The composting process may produce “oversize” materials, i.e. the large woody fraction of the finished product after the finer grades have been screened out. This may be re-used within the composting process to provide structural material but also increasingly is being used as a source of biomass to generate renewable energy.

This material will not be regulated as waste when sold and dispatched for use as a biomass fuel provided it consists solely of chipped woody material from source segregated municipal garden waste collections, commercial gardening contractors, and tree surgeons, etc. It must not contain chip from particleboard, furniture, demolition timber, treated wood, etc. Further, it must not contain physical contamination such as stones, metal or plastic.

Where oversize material from composting operations are used for the production of energy in appliances with a rated thermal input of 20MW or more, the activity will be regulated as the combustion of ‘fuel’ under Section 1.1.

Residues from Virgin Timber Processing

Where source segregated, untreated offcuts, trimmings, bark and sawdust derived from virgin timber processing (e.g. sawmills, joinery, furniture manufacture) are used for the production of energy in appliances with a rated thermal input of 20MW or more, the activity will be regulated as the combustion of ‘fuel’ under Section 1.1.

Post Consumer Wood

In general, post consumer wood such as mixed municipal or construction and demolition collections will be regarded as waste and must be incinerated in an IED Chapter IV compliant plant.

However, where post consumer wood consists solely of source segregated, untreated and uncontaminated timber, it may be possible that it could cease to be waste once it has been prepared for use as a fuel and be regulated as a ‘fuel’ for the purpose of the PPC Regulations. Using the Wood Recycling Association grading system, replicated in Appendix 3, this fuel could consist of some “Grade A – Clean Recycled Wood” such as untreated clean white pallets and timber packaging. Note that the storage and chipping of waste wood such as scrap pallets and packaging is a waste management activity and must be covered by a Waste Management Licence or Exemption.

Demonstrations must be made to SEPA on a case by case basis and may only apply to source segregated collections of untreated and uncontaminated Grade A wood. A clear audit trail for the sources must be maintained to demonstrate that only suitable materials are used.

For instance, painted or chemically treated timber can not be included. We will refer to [PAS111:2012](#) when assessing wood processing systems which produce Grade A recycled wood fuels.

Material separated from mixed collections would not usually be considered for ‘end-of-waste’ status by SEPA and we strongly advise discussing any proposed end of waste cases with us before submitting a case.

Wastes – Section 5.1 Activities

The recovery of energy from waste biomass will be regulated under Section 5 of the PPC Regulations. Some of these wastes may be excluded from the requirements of Chapter IV of the IED.

Waste Particleboard

Particleboard sites which produce MDF, Particleboard and Orientated Strand Board have introduced procedures to control the waste wood entering their processes to ensure that their finished product complies with the definition of ‘biomass’ in [Article 3\(31\)\(b\)\(v\) of the Industrial Emissions Directive](#). This compliance protects the downstream users of their wood products and allows the exemption to stand in relation to this wood throughout use - provided the wood is not treated with wood preservatives or coatings which contain halogenated compounds or heavy metals.

So, the recovery of energy from MDF, Particleboard and Orientated Strand Board will be regulated as the incineration of waste but is likely to be excluded from the scope of Chapter IV of the IED. This also applies to Formica and melamine materials.

Depending on the throughput, such incineration would generally require either a Section 5.1 PPC Permit or a [Paragraph 5\(1\) Exemption](#) from WML. However, if carried out as part of any other Part A activity, such as a Section 6.6 timber activity, the incineration activity should be regarded as a Directly Associated Activity.

Paper and Cardboard

The recovery of energy from collected paper and cardboard will be regulated as the incineration of waste under Section 5.1 of the PPC Regulations. Chapter IV of the IED will also apply and there is no de-minimus threshold. However, the incineration of source segregated paper and cardboard which is capable of being recycled will be banned from 2014 by the [Waste \(Scotland\) Regulations 2012](#). Only contaminated paper and card, rejected by recycling markets will be suitable for incineration.

Post Consumer Wood

The recovery of energy from mixed wood waste collections such as construction and demolition waste or civic amenity site waste or wood waste that is contaminated (e.g. painted or chemically treated) or mixed with contaminated wood will be regulated as the incineration of waste under Section 5.1. Chapter IV of the IED will also apply and there is no de-minimus threshold.

Table 1: Permitting Summary

Biomass Type	'Fuel' or 'Waste'	Scale	Regulation	Chapter IV
Purpose grown energy crops (timber, mitchansus, willow etc) Industrial residues (forestry brash, distillery draff, oat husks, barley stubble, timber sawmill/joinery offcuts) Some 'Grade A' Recycled Wood (from source segregated, untreated clean white pallets, packaging etc)	Fuel	Aggregated combustion capacity has a net rated thermal input of 50MW or more	PPC Part A Section 1.1A	No
		Single appliance has a net rated thermal input of between 20 and 50MW	PPC Part B Section 1.1B(a)	
		Single appliance has a net rated thermal input of less than 20MW	Clean Air Act (Local Authority)	
Waste wood and particleboard (MDF, chipboard, OSB) which meet the definition of 'biomass' in the IED	Waste	Capacity of more than 3 tonnes per hour	PPC Part A Section 5.1A(c) (unless carried out as part of another Part A activity)	No
		Capacity between 50kg – 3 tonnes per hour	PPC Part B Section 5.1B(a) (unless carried out as part of another Part A activity)	
		Capacity is less than 50kg/hour	Paragraph 5(1) Exemption	
Paper and Cardboard Mixed construction and demolition & municipal wood waste Fencing, transmission poles, railway sleepers	Waste	Any throughput	PPC Part A Section 5.1A(a) or (b) (unless carried out as part of another Part A activity)	Yes

Appendix 1 Summary of Relevant Legislation

Pollution Prevention and Control (PPC)

The [Pollution Prevention and Control \(Scotland\) Regulations 2012](#) prescribe certain industrial activities for control. Part A installations tend to be larger and more complex and their permits contain conditions regarding emissions to air, land and water and also cover issues such as noise and waste minimisation. Part B installations tend to be smaller and less complex and their permits contain conditions regarding emissions to air only.

Chapter IV of the Industrial Emissions Directive (IED)

Chapter IV of the IED has replaced the Waste Incineration Directive (WID). It ensures that strict controls are applied to almost all installations that incinerate or co-incinerate waste by stringent technical requirements that apply to individual sites, e.g. emission limit values, continuous monitoring requirements.

The Clean Air Act and Environmental Protection Act

SEPA staff should be aware that there are some concerns about air quality arising from combustion of biomass and in some cases Local Authorities are refusing planning permission (where required), particularly in urban areas. The [Clean Air Act 1993](#) ("CAA") may have regulatory control over smaller biomass burning plant that fall outwith the PPC system. Local authorities are the regulating body for that Act. The most relevant parts of the CAA are those that allow local authorities to set up Smoke Control Areas, where premises are committing an offence if they emit smoke unless using an approved **smokeless fuel**, or an **approved appliance**. Relatively few Local Authorities have set up Smoke Control Areas; these are shown in a map on the [Scottish air quality website](#), as are **Local Air Quality Management Areas**. The Act also contains other powers regarding the control of emissions from larger domestic and industrial boilers.

Local Authorities may be able to deal with smoke causing a statutory nuisance under the provisions of the Environmental Protection Act 1990.

Useful advice is given in [guidance](#) on Biomass and Air Quality from Environmental Protection UK to Scottish Local Authorities

Appendix 2 Thresholds

Consumption limits identified in Section 1.1 of the PPC Regulations relate to megawatts of energy produced while Section 5.1 relates to consumption weight against time. There is no direct correlation between these values however an approximation can be made on the basis of calorific value which Kempe's engineers handbook gives as 14.3 MJ.kg⁻¹ for woodchips with a 25% moisture content.

kg.hr⁻¹	50	500	720	1000
MW	0.2	2	2.8	4.0

Appendix 3 Wood Recycling Association Grading System

Grade	Typical markets	Typical sources of raw material for recycling	Typical materials	Typical non – wood content prior to processing
Grade A "Clean" recycled wood	A feedstock for the manufacture of professional and consumer products such as animal bedding and horticultural mulches. May also be used as fuel for renewable energy generation in non-WID installations, and for the manufacture of pellets and briquettes.	Distribution. Retailing. Packaging. Secondary manufacture, e.g. joinery. Pallet reclamation.	Solid softwood and hardwood. Packaging waste, scrap pallets, packing cases, and cable drums. Process off-cuts from the manufacture of untreated products.	Nails and metal fixings. Minor amounts of paint, and surface coatings.
Grade B Industrial feedstock	A feedstock for industrial wood processing operations, such as the manufacture of panel products, including chipboard and medium density fibreboard.	As Grade A, plus construction and demolition operations transfer stations.	May contain up to 60% Grade A material as above, plus building and demolition materials and domestic furniture made from solid wood.	Nails and metal fixings. Some paints, plastics, glass, grit, coatings, binders and glues. Limits on treated or coated materials as defined by WID.
Grade C Fuel	Biomass fuel for use in the generation of electricity and/or heat in WID compliant installations.	All above, plus municipal collections, recycling centres transfer stations and civic amenity recycling sites.	All of the above plus fencing products, flat pack furniture made from board products and DIY materials. High content of panel products such as chipboard, MDF, plywood, OSB and fibreboard.	Nails and metal fixings. Paints coatings and glues, paper, plastics and rubber, glass, grit. Coated and treated timber (non CCA or creosote).
Grade D Hazardous waste	Requires disposal at facilities licensed to accept hazardous waste.	All of the above plus fencing, track work and transmission pole contractors.	Fencing, transmission poles, railway sleepers, cooling towers.	Copper / chrome / arsenic (CCA) preservation treatments and creosote.

Appendix 4 Further Guidance and Information

Useful Links

Revised Waste Framework Directive

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:EN:PDF>

PAS111:2012 – Specification for the requirements and test methods for processing waste wood

<http://www.woodrecyclers.org/PAS111.pdf>

Wood Recyclers Association

<http://www.woodrecyclers.org/>

Industrial Emissions Directive

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32010L0075:EN:NOT>

Pollution Prevention and Control (Scotland) Regulations 2012

<http://www.legislation.gov.uk/sdsi/2012/9780111018514/contents>

WID Practical Guide

<http://www.scotland.gov.uk/Publications/2005/04/19140354/04030>

PPC Part A Practical Guide

http://www.sepa.org.uk/air/process_industry_regulation/pollution_prevention_control/idouc.aspx?docid=3e6159c9-4f43-49d8-9389-e32e1630666f&version=-1

PPC Application Forms

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

Paragraph 5 Exemption

http://www.sepa.org.uk/waste/waste_regulation/application_forms/exempt_activities/paragraph_5.aspx

Clean Air Act

<http://www.legislation.gov.uk/ukpga/1993/11/contents>

Scottish Air Quality Website

<http://www.scottishairquality.co.uk/laqm.php>

Biomass and Air Quality Guidance for Local Authorities

http://www.environmental-protection.org.uk/assets/library/documents/EPUK_Scotland_Biomass_Guidance_Nov_2010.pdf