

# The Mechanical Biological Treatment of Waste and regulation of the outputs.

## An Environment Agency guide to assist those considering the Mechanical Biological Treatment of waste.

The Environment Agency is responsible for enforcing waste law in England. This guide explains how the law governs the outputs from MBT to those involved in using or regulating mechanical biological treatment (MBT).

### What does this guide cover?

It describes what the Agency understands by MBT and how the different outputs should be regulated. It also explains which activities are subject to landfill allowances under the Landfill Allowance Scheme. Annex A summarises how possible uses of MBT outputs may be regulated. This guide provides our view but decisions on the definition of waste in particular must be made in the light of all the circumstances and in accordance with current case law on the definition's interpretation by the European Court of Justice (ECJ) and our national Courts. As case law develops, this guidance may need to be updated.

### What doesn't this guide cover?

It does not cover whether a land-use planning consent is required for the proposed use - you must check this with the waste planning authority<sup>1</sup>. It does not help determine whether the outputs are subject to either the standard or the lower rate of landfill tax as this is a matter for HM Revenue & Customs. Nor does it detail the requirements of the EU Animal By-Products Regulation and the approval mechanisms of the Regulation that the MBT plant must comply with if the output is to be spread on land or used as cover in a landfill. If you are considering this, you should contact the State Veterinary Service.

Advice on the detail of waste regulatory controls such as Duty of Care, registration of carriers etc can be found on our website. <http://www.environment-agency.gov.uk/business/topics/waste/default.aspx>

1. [General planning guidance is available at http://www.planningportal.gov.uk/.](http://www.planningportal.gov.uk/)

This guide is our understanding of the law at the date of the document and is no substitute for obtaining your own independent legal advice. The law may change and the user must take account of future developments by, for example, checking our website to ensure that they have the latest version of this document.

## **What is MBT?**

Mechanical Biological Treatment (MBT) plants are used to treat residual municipal waste by a combination of physical and biological processes. The biological processes are aerobic decomposition and anaerobic digestion. The physical processes include size reduction/shredding of the waste, separation of ferrous and non-ferrous metals, size classification, density separation, heat/steam treatment and screening and/or size reduction of outputs. MBT is an intermediate treatment process. Not all these processes are used in each plant and there are many possible configurations.

There are usually several different outputs from the process: metals; glass; refuse derived fuel, i.e. high calorific value – plastics, other oil-based, paper, card; liquid digestate which only arises from anaerobic digestion and a solid digestate.

## **Are the outputs waste?**

Uncertainty over the point at which waste has been fully recovered and ceases to be waste within the meaning of Article 6(1) of the EU Waste Framework Directive (2008/98/EC) has inhibited the development and marketing of materials produced from waste which could be used beneficially without damaging human health and the environment. In some cases, this uncertainty has also inhibited the recovery and recycling of waste and its diversion from landfill. Therefore a number of Quality Protocol's have been published which sets out criteria for the production of a product from a specific waste type. Compliance with these criteria is considered sufficient to ensure that the fully recovered product may be used without risk to the environment or harm to human health and therefore without the need for waste management controls.

## **All of the outputs from MBT are waste?**

Other than those fully recovered products meeting the compliance criteria of a Quality Protocol. Therefore an environmental permit is normally required in order to carry out any waste recovery or disposal operation.

The definition of waste in the Waste Framework Directive is “any substance or object...which the holder discards or intends or is required to discard” (Article 3(1)).

The effect of Article 2 is to exclude specified categories of waste from the scope of the Directive.

What constitutes a waste is important to a number of regimes beyond Environmental Permitting. Because of this, the Government has published separate guidance on this subject. Reference should be made to the Guidance on the definition of waste<sup>2</sup>.

[2. www.defra.gov.uk/environment/waste/topics/index.htm#what](http://www.defra.gov.uk/environment/waste/topics/index.htm#what)

A number of Directives delivered through Environmental Permitting also depend on the definition of waste. These include the Landfill, Waste Incineration, ELV, WEEE and IPPC Directives.

## **Exempt waste operations - Article 24 - Waste Framework Directive**

The Waste Framework Directive provides for exemptions from the requirement for a permit for the carrying out of certain waste operations (Article 24). New regulations changing waste exemptions were introduced on 6 April 2010. The Environmental Permitting (England and Wales) Regulations 2010 affect the types of waste operation that are exempt and the rules which control them.

The information on our website<sup>3</sup> will help you find out about the regulations that control waste exemptions and what types of waste operation are listed as exempt.

## **Establishing when the outputs from MBT plant cease to be waste.**

We strongly support genuine waste recovery and encourage recovery of waste rather than its disposal, but it is important to clearly distinguish between recovery and disposal.

Recovery means any operation the principal result of which is waste serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy. Annex II of the Directive sets out a non-exhaustive list of recovery operations;

Disposal means any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy. Annex I of the Directive sets out a non-exhaustive list of disposal operations;

The lists of disposal and recovery operations in Annex I and Annex II to the Directive are intended to provide illustrations of the way these operations are carried out in practice. They are not intended to be exhaustive. An operation may be a disposal or recovery operation within the meaning of the Directive even if it is not listed in either Annex I or Annex II. The Directive will therefore apply to existing methods of disposing or recovering waste which are not listed and also to any new methods of disposing or recovering waste.

The terms recovery and disposal are mutually exclusive – a given operation cannot be both a disposal and a recovery operation.

## **Main outputs from MBT.**

We consider below the five main outputs from MBT plants:

[3. http://www.environment-agency.gov.uk/business/topics/permitting/32322.aspx](http://www.environment-agency.gov.uk/business/topics/permitting/32322.aspx)

## Metals

The ferrous and non-ferrous metal output from MBT plant will generally cease to be waste when formed into ingots, sheets or coils of steel<sup>4</sup>.

## Glass

The facts of each case must be considered, however we can say that waste glass that is recovered and meet the quality and conformity requirements of the following Quality Waste Protocols are likely to be regarded as having been completely recovered and having ceased to be waste at that point.

[http://www.environment-agency.gov.uk/static/documents/Business/090108\\_Quality Protocol for Flat Glass - published.pdf](http://www.environment-agency.gov.uk/static/documents/Business/090108_Quality Protocol for Flat Glass - published.pdf)

[http://www.wrap.org.uk/downloads/0083\\_Quality Protocol A4.cb4e5873.87.pdf](http://www.wrap.org.uk/downloads/0083_Quality Protocol A4.cb4e5873.87.pdf)

## Liquid digestate.

This only arises from anaerobic digestion. The Quality Protocol sets out criteria for the production of quality outputs from anaerobic digestion of material that is biodegradable waste (biowaste). Quality outputs from anaerobic digestion include the whole digestate, the separated fibre fraction and the separated liquor. If these criteria are met, quality outputs from anaerobic digestion will normally be regarded as having been fully recovered and to have ceased to be waste.

[http://www.environment-agency.gov.uk/static/documents/Business/AD\\_Quality Protocol GEHO0610BSVD-E-E.pdf](http://www.environment-agency.gov.uk/static/documents/Business/AD_Quality Protocol GEHO0610BSVD-E-E.pdf)

In order to meet the requirements of the above Quality Waste Protocol the waste materials accepted at the plant must conform to those waste types listed in Appendix B and they must be source-segregated, i.e. they must have been kept separate from any other wastes and non-biodegradable materials.

We believe it is unlikely that liquid digestate from anaerobic digestion after MBT will conform to the above Quality Waste Protocol due to the fact that the wastes are unlikely to be source segregated. Therefore any liquid digestate from anaerobic digestion after MBT will remain a waste until it has been spread on land as a soil conditioner under an environmental permit.

## Fine, solid fraction sent for composting.

Depending on the processes at the facility and its waste acceptance procedures, compost can be produced to different qualities. Some could retain their waste characteristics and would need to be regulated under the European Waste Framework Directive (WFD), and some could be of high quality and no longer waste.

[4.http://www.defra.gov.uk/environment/waste/topics/documents/ECJCaseLaw20090209.pdf](http://www.defra.gov.uk/environment/waste/topics/documents/ECJCaseLaw20090209.pdf) See Mayer Parry Recycling Ltd judgment on Case C-444/00 (Mayer Parry Recycling Ltd).

To help reduce these uncertainties we have developed a Quality Waste Protocol for compost.

Basically, compost will normally be regarded as having been fully recovered and to have ceased to be waste, and therefore no longer subject to waste management controls when

1. the compost is produced using only those source-segregated input materials listed in Appendix B of the Quality Waste Protocol for compost;
2. the compost meets the requirements of an approved standard;
3. the compost is destined for appropriate use, in accordance with Section 4, in one of the designated market sectors.

We consider that the non-source segregated stabilised organic fraction from an MBT plant will only have a few end uses that will depend on the quality of this fraction. The solid fraction from an MBT plant requires further recovery and is considered to be a waste for regulatory purposes, only ceasing to be waste when fully recovered.

## High heat value fraction

This is separated for potential energy recovery and is often referred to as Refuse Derived Fuel (RDF). The output comes in several forms: crude and loose; shredded; or shredded and compressed into dense fuel pellets. The Environment Agency considers that RDF (e.g. fuel derived from household waste) is waste and remains waste until it is burned as fuel<sup>5</sup>.

## Spreading waste to land

### Environmental permits and registered exemptions

It is normally an offence to subject waste to disposal or recovery operations without the benefit of an environmental permit.

We have developed a number of standard environmental permits that allow operators to store and subsequently use waste for a number of specific purposes. You can find the standard rules sets, generic risk assessment, guidance and application form by using the following link.

<http://www.environment-agency.gov.uk/business/topics/permitting/32334.aspx>

If you applying for a waste recovery activity involving the permanent deposit on waste on land for construction or land reclamation, a waste recovery plan that complies with Regulatory Guidance Note 13, will need to be produced. Before applying for a permit to deposit waste on land you should refer to our guidance (RGN 13) which will help you decide whether the proposed activity is recovery or disposal.

[5.http://www.defra.gov.uk/environment/waste/topics/documents/ECJCaseLaw20090209.pdf](http://www.defra.gov.uk/environment/waste/topics/documents/ECJCaseLaw20090209.pdf) See ARCO Chemie ECJ judgment on Joined Cases C-418/97 and C-419/97 (ARCO Chemie Nederland Ltd etc).

However, there are a number of exemptions from environmental permitting subject to certain limitations and registration with Agency. Activities exempt from the need to hold an environmental permit are set out in Section 5.3 or Section 5.4 of Part 2 of Schedule 1 to the Environmental Permitting (England and Wales) Regulations 2010 (as amended). The exemptions are all subject to specified criteria and a general requirement to carry out the activity without endangering human health or harming the environment.

## **Available exemptions**

Since the introduction of the new Environmental Permitting (England and Wales) Regulations 2010, there are no specific exemptions available permitting the spreading of waste from MBT.

## **Landfilling MBT outputs**

MBT outputs can be sent to an appropriately authorised landfill. The outputs are generally non-hazardous waste and can be landfilled at a suitable non-hazardous landfill site. Any biodegradable waste that is landfilled will count against landfill allowances.

## **Use in landfill engineering**

It is unlikely that outputs from MBT will meet the specifications for any landfill engineering requirements. If they do and are used, unless the operation is recovery,<sup>6</sup> the biodegradable portion will still count against landfill allowances.

## **Use for daily cover for landfill**

Suitably stabilised waste from MBT processes may be used for daily and/or intermediate cover provided it has no noticeable odour, is not attractive to rodents, flies or birds; and complies with permit conditions. Any biodegradable waste used in this way will count against landfill allowances.

## **Use in landfill restoration**

Suitably stabilised waste from MBT processes may be appropriate for use in landfill restoration schemes provided that use complies with the conditions of a land-use planning consent and with the conditions of an extant licence or permit. Providing the use of the MBT output in landfill restoration complies with the conditions of a land-use planning consent and with the conditions of an extant licence or permit then we will consider this as recovery.

## **Export of outputs from MBT**

If you intend to move the waste into or out of the UK, then additional controls apply. You would need to understand exactly what is involved before moving the waste. Reference should be made to our international waste shipments pages.<sup>7</sup>

[6. http://www.environment-agency.gov.uk/static/documents/Business/RGN13\\_Defining\\_Waste\\_Recovery\\_v1.0.pdf](http://www.environment-agency.gov.uk/static/documents/Business/RGN13_Defining_Waste_Recovery_v1.0.pdf)

[7. http://www.environment-agency.gov.uk/business/sectors/32447.aspx](http://www.environment-agency.gov.uk/business/sectors/32447.aspx)

## Annex A - Summary of outputs, uses and legal requirements

Type of output	Type of use	Can it be exempt (specified recovery operations)	Permit conditions required	Counts Against Landfill allowances
Suitably stabilised waste	Landfill	No	Yes	Yes if derived from MSW
Suitably stabilised waste	Landfill daily or intermediate cover	No	Yes	Yes if derived from MSW
Suitably stabilised waste	Landfill restoration/land reclamation	No	Yes	No if meets requirements of recovery
Digestates	Landfill restoration/land reclamation	No	Yes	No if meets requirements of recovery
High calorific value/refuse derived fuel (RDF)	As a fuel or carbon source in any combustion process	No	Yes, PPC permit for plant which must comply with Waste Incineration Directive	No

