EUROPEAN COMMISSION
DIRECTORATE-GENERAL
ENVIRONMENT

The Director-General

Guidance on the interpretation

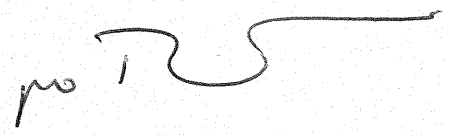
of key provisions of

Directive 2008/98/EC on waste

Foreword

Proper implementation, application and enforcement of EU waste legislation are among the key priorities of EU environmental policy. Directive 2008/98/EC on waste known as the Waste Framework Directive repeals the previous Directive 2006/12 on waste and Directives 75/439/EEC and 91/689/EEC regarding waste oils and hazardous waste, respectively. The revised Waste Framework Directive applies from 12 December 2010 and introduces new provisions in order to boost waste prevention and recycling as part of the waste hierarchy and clarifies key concepts namely, the definitions of waste, recovery and disposal and lays down the appropriate procedures applicable to by-products and to waste that ceases to be waste. Since the date of application of the Waste Framework Directive, many questions regarding its interpretation and application have been raised by national authorities and stakeholders.

This guidance document is intended to assist both national authorities and economic operators with the aforementioned legislation. This document may be revised in the future, according to the further development of European waste management policy.



June 2012

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Notice:

This document contains non-binding guidance to Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, also known as the Waste Framework Directive or WFD. This guidance document is intended to help national authorities and economic operators interpret this Directive. The content, including examples, reflects the views of Directorate-General Environment of the European Commission and as such is not legally binding. The binding interpretation of EU legislation is the exclusive competence of the Court of Justice of the European Union (CJEU). The views expressed in this guidance document cannot prejudge the position that the Commission might take before the CJEU.

It is the Member States' task to enforce EU environmental law and enforcement practice may differ between Member States, depending on circumstances, administrative structures, regional or local conditions or some other reason. In practical cases similar to the examples presented, other facts may justify a different decision by the competent authority. Therefore, the examples should in no way be construed as laying down decisions that Member State legislators or enforcement bodies are obliged to take. In practical implementation and enforcement, specific circumstances and the context of the waste management situation, as well as the requirements of the legislation, will always need to be taken into account.

In the document, the European legislation in force at the time of writing is taken as the basis. Annex 1 contains a reference to the date of adoption of all legal acts cited, the publishing reference in the Official Journal of the European Union (OJ) and a link to the corresponding entry on the EurLex website. It should be noted that the legal acts may since have been amended or repealed. Information on any such changes can be found in the EurLex entries to the acts under the section 'Relationship between documents'; consolidated versions of the acts can be found at http://eur-lex.europa.eu/RECH_consolidated.do.

The Court of Justice of the European Union, in this text referred to as CJEU, is referred to by this name even if the ruling was issued when the official name of the Court was different. Annex 2 contains a reference to the date, the case number and a link to the corresponding entry on the EurLex web site. Additional material on case law can be found on the CJEU's official website http://curia.europa.eu/. This document refers to a number of CJEU rulings related to previous Directives on waste 75/442/EEC or 2006/12/EC, respectively, where the impact of the rulings cited may still be applicable.

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1 Definitions

1.1 Definition of waste

1.1.1 Subject and background

The definition of waste is one of the key concepts of the Waste Framework Directive (hereinafter, WFD) (see recital 8 WFD). It determines what falls under the Directive's scope.

The WFD concept of waste affects the EU approach towards waste management. For example, only trans-frontier movements of *waste* as defined in the WFD are subject to the strict procedural requirements of the EU Waste Shipment Regulation (EC) No 1013/2006). [1] It also has a role in determining the scope and application of other EU instruments directly concerning waste management, e.g. the Landfill Directive (1999/31/EC) and the Industrial Emissions Directive (2010/75/EC).

Moreover, the 'waste' definition of WFD is also crucial because legal documents in other fields of environmental legislation refer to it. For example, Article 2(2) of the REACH Regulation stipulates that REACH does not apply to waste in the sense of the WFD.[2] Thus, waste in the sense of the WFD definition is explicitly and specifically excluded from REACH requirements.

1.1.2 What is the definition of waste within the new WFD, and what has changed?

Article 3(1) of the new WFD defines waste as 'any substance or object which the holder discards or intends or is required to discard'.

The terms 'substance' and 'object' are not to be understood in the sense of EU chemicals legislation, but as autonomous terms of waste legislation which are to be read broadly. Any substance or object is either waste or non-waste.[3] The definition of waste itself has not been modified compared to the previous Waste Framework Directive (2006/12/EC). The CJEU has

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1 Note that Article 28 WSR 1013/2006 foresees in the case of disagreement between the Competent Authorities concerned with respect to the classification as waste or non-waste the more stringent rules, i.e. the regime of the Waste Shipment Regulation.

2 REACH Regulation (EC) 1907/2006 makes reference to waste in the sense of Directive 2006/12/EC. According to Article 41 and Annex V to the WFD, such references have to be understood as references to the WFD.

3 Sometimes, the term 'product' is used synonymously for 'non-waste'. However, due to the risk of confusion with other concepts, the term is not used in this sense for the purpose of this Guidance Document. Where the term 'product' is used, it must not be understood as being the opposite of waste.

been required to clarify and interpret the concept of waste on several occasions, having regard to the definition of waste under the previous directives.

In two key areas, however, the legislator has tightened up the concept of waste by incorporating concepts of by-products (see Chapter 1.2 below) and of end-of-waste criteria (see Chapter 1.3 below).

Both the concepts 'by-product' and 'end-of-waste' introduce a distinction between waste and non-waste.

1.1.2.1 Key term 'discard'

The key term of the waste definition is 'discard', used in three alternatives ('any substance or object (1) which the holder discards or (2) intends or (3) is required to discard'), without providing definitions or clarification on the exact meaning of these.

However, the first alternative is describing an action or activity of the holder of the substance or the object, the second describes an intention of the holder, and the third a legal obligation (see examples below). These three alternatives are not always easy to distinguish. Regarding the second alternative (intention to discard), note that the CJEU has recognised that the holder's intention is to be inferred from his/her actions in the light of the aims of the WFD and having regard to factors provided by the Court, and is thus an objective test.

For a number of every-day situations, the allocation of a holder's actions and activities to one of the three 'discarding' alternatives and thus the classification of a substance or object as a waste is an easy task. For example, an item thrown in a dustbin is discarded, and is thus considered waste. On the other hand, for a number of cases and in a very wide range of circumstances, there remains uncertainty.

The CJEU has recognised a need for flexibility in adopting a case-by-case approach as well as a need to consider all the specific factual circumstances involved. Furthermore, the Court has held that in view of the aims and objectives pursued by the WFD, the concept of waste cannot be interpreted restrictively.[4]

The following non-exhaustive clarifications regarding the concept of discarding were provided by the CJEU:

- Discard applies to both recovery and disposal of waste. However, it should be noted that this does not mean that any substance which undergoes a recovery/disposal

[4] Joined cases C-418/97 and C-419/97 ARCO (2000), paras 36 et seqq; Case C-252/05 Thames Water (2007) para 28; Case C-188/07 Commune de Mesquer (2008), para 39, 44.

operation as listed in the WFD Annexes is waste *per se*, but it might be regarded as evidence for being waste;[5]

- Discard can involve a positive, neutral, or negative commercial value. No distinction is made based on whether the substance/object is marketable or not;[6]

- Discard can be intentional/deliberate on the part of the holder or unintentional / involuntary / accidental[7] (see also 1.1.2.4 below) or even can occur with or without the knowledge of the holder;[8]

- The storage location of a material does not influence whether it is a waste or not.[9]

It must be noted that no single factor or indicator is conclusive. It is always necessary to consider all the circumstances. Hence, none of the examples provided in the following paragraphs are intended to take precedence over real-life cases, since the circumstances of those cases may lead to other results.

1.1.2.2 Practical examples for the three alternatives of 'discarding'

Discard:

- An item is thrown into a waste bin;

- A company transfers material to a waste collector.

Intention to discard:

- In its decommissioning plan in the event of future closure, an operating site indicates that it will send off-site for appropriate disposal or recovery any of its stock of raw materials that cannot be returned**;**

- The holder of leftover quarried stone which has been stored for an indefinite length of time to await possible use discards or intends to discard that leftover stone'.[10]

Requirement to discard:

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5 Joined cases C-418/97 and C-419/97 ARCO (2000), para 51; Case C-9/00 Palin Granit Oy (2002), para 27.

6 Joined cases C-206/88 and C-207/88 Vessoso and Zanetti (1990), para 9 (judgment prior to Directive 91/156/EEC).

7 Case C-252/05 Thames Water (2007) para 28.

8 Case C-1/03 van de Walle (2004) paras 46 et seqq.

9 Case C-9/00 Palin Granit Oy (2002), para 28/29.

10 Case C-9/00 Palin Granit Oy (2002), para 39.

- Any oil containing PCBs above 50 ppm must be discarded under the provisions of EU PCB/PCT Directive 96/59/EC and is therefore to be considered waste**;**

- Stockpiles of banned pesticides must be discarded and therefore be managed as waste.

1.1.3 Oil spills in the marine environment and waste legislation

The issue of whether oil spills in the marine environment should be considered waste assumed practical relevance when heavy fuel oil contaminated the territory of the Commune de Mesquer (Brittany) following the sinking of the oil tanker Erika on 12 December 1999. It again became relevant for the EU in the context of lessons learned from an oil spill following an accident during offshore drilling in the Gulf of Mexico in April 2010.[11] After that accident, the Commission decided to review its existing legislation applicable in similar cases and examine how waste legislation could apply.

Box 1: Must oil spills in the marine environment be regarded as waste?

Oil spills such as those in Brittany or in the Gulf of Mexico are considered waste under EU waste legislation. In its judgment C-188/07 of 24 June 2008 (Commune de Mesquer),[12] the CJEU found that hydrocarbons accidentally spilled at sea following a shipwreck, mixed with water and sediment and drifting along the coast of a Member State until they are washed up on that coast constitute waste within the meaning of the WFD, where they are no longer capable of being exploited or marketed without prior processing.

In interpreting this judgment it appears evident that any accidentally spilled hydrocarbons at sea, under circumstances where they are no longer capable of being exploited or marketed without prior processing, would have to be considered as waste. This would also apply to any oil spills from offshore drilling. Accordingly, their further treatment, storage or processing would have to satisfy the requirements of the waste legislation.

In addition, the characterisation of oil spills at sea as 'waste' can have direct consequences for the responsibility of the companies engaged in petroleum

[11] Note that in October 2010 the European Commission published the Communication COM(2010) 560 final 'Facing the challenge of the safety of offshore oil and gas activities' (available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0560:FIN:EN:PDF). The Communication comprises the first step in bringing forward a comprehensive legal framework ensuring uniformly high safety standards applicable across the EU and third countries and including proposals covering *inter alia* accident prevention, disaster response and liability. The present section is prepared for the purpose of fulfilling the Commission's commitment to examine the applicability of the WFD to oil spills in this document, as expressed in the Communication. In parallel, other actions are being undertaken at this stage by the Commission.

[12] Case C-188/07 Commune de Mesquer.

activities and on the extent of their liability, as described below.

1.1.3.1 Responsibility for the management of waste from oil spills

Classification of oil spills as waste implies legal consequences, including the application of the rules of the WFD and of the Environmental Liability Directive 2004/35/EC.

According to the polluter pays principle, the costs of the management of such waste shall be borne by the original waste producer or by the current or previous waste holders. The CJEU, in the Commune de Mesquer case, stated in this context that 'The application of the 'polluter pays' principle (...) would be frustrated if (...) persons involved in causing waste escaped their financial obligations as provided for by that directive, even though the origin of the hydrocarbons which were spilled at sea, albeit unintentionally, and caused pollution of the coastal territory of a Member State was clearly established'.[13]

Regarding the polluter-pays principle, the CJEU further held in its judgment C-188/07 that 'the cost of disposing of the waste is to be borne either by the 'previous holders' or by the 'producer of the product from which' the waste in question came'.[14] The Member States are bound as to the result to be achieved in terms of financial liability for the cost of disposing of such waste. They are therefore obliged to ensure that their national law allows that cost to be allocated either to the present or previous holders or to the producer of the product from which the waste came [15].

Under the WFD, Member States must ensure that the costs of waste management are borne by the original waste producer or by the current or previous waste holders. Member States may decide that the costs of waste management are to be borne partly or wholly by the producer of the product from which the waste came and that distributors of the products from which the waste came may share these costs. (Article 14 WFD). Therefore, it is only if Member States use this possibility that producers of the product from which the waste came may bear the costs of management of waste.

The responsibility for the management of oil spills — i. e. the collection, transport, recovery and disposal, as well as the supervision of such operations and the after-care of disposal sites[16] — can be determined on the basis of Article 15, Member States shall take the necessary measures to ensure that the waste producer or holder carries out the treatment of waste himself or has the treatment handled by an establishment or undertaking which carries out waste treatment operations or arranged by a private or public waste collector.

13 Case C-188/07 Commune de Mesquer, para 72.
14 Case C-188/07 Commune de Mesquer, para 79.
15 Case C-188/07 Commune de Mesquer, para 80.
16 See the definition of "waste management" in article 3 (9).

When collected spilled oils are transferred from the original producer or holder to an establishment or undertaking which carries out waste treatment operations, or to a private or public waste collector, the responsibility for carrying out a complete recovery operation may remain with the waste producer. Member States may specify the conditions of responsibility and decide in which cases the original producer is to retain responsibility for the whole treatment chain or in which cases the responsibility of the producer and the holder could be shared or delegated among those involved in the treatment chain.

1.1.3.2 How should oil spills be handled?

EU waste legislation does not prescribe detailed methods for the collection of spilled waste oils and their subsequent treatment; it is therefore for the Member States to decide which steps need to be taken to minimise the risks to human health and the environment and / or to restore the environment to its previous condition. In any case, however, the management of spilled oils should comply with the rules of the EU waste legislation, such as the waste hierarchy, minimisation of risks to health and the environment, safe disposal requirements, or — where applicable — provisions of the Waste Incineration Directive and the Best Available Techniques - BAT standards.

1.1.4 What is the relationship between the definition of waste and the List of Waste?

Article 7 of the WFD clarifies that just because a substance or object appears in the List of Waste Decision (2000/532/EC), this does not mean it is waste under all circumstances. It is waste only where the definition 'any substance or object which the holder discards or intends or is required to discard' is met.

1.2 The concept of 'by-product'

1.2.1 Subject and background

The CJEU, through a number of rulings[17], has given guidance on when a material can be regarded as something which an undertaking wishes to exploit rather than a substance or object which is being discarded. The new WFD does not change these legal considerations in substance but has codified them in Article 5 to improve legal certainty and has introduced in Article 5(2) a mandate for the Commission to determine technical criteria for certain materials based on these legal considerations. It should be emphasised that whether a material is waste or not must be determined in the light of all the circumstances, taking due account of the aim of the WFD.

For the purposes of this Guidance Document the following illustrative terms are used:

[17] Palin Granit, Case C-9/00 *Palin Granit Oy* (2002) ECR I-3533.
Saetti, C-235/02, *Saetti* Order, 15th January 2004.

- Product — all material that is deliberately created in a production process. In many cases it is possible to identify one (or more) 'primary' products, this or these being the principal material(s) produced;

- Production residue — a material that is not deliberately produced in a production process but may or may not be a waste.

A production residue that fulfils the conditions of Article 5(1) WFD is a by-product. Bearing in mind that any substance or object can be either waste or non-waste, by-products are regarded by definition as non-waste. This means that by-products should be subject, where applicable, to legislation which excludes waste from its scope, such as REACH (see 1.2.10 below).

A decision on whether or not a particular substance or object is a by-product must in the first instance be made by the producer of the substance or object, together with the competent national authorities, based on the applicable national legislation transposing the WFD.

1.2.2 Is the material concerned a production residue or a product?

A production residue is something other than the end product that the manufacturing process directly seeks to produce.[18] Where the production of the material concerned is 'the result of a technical choice', it cannot be a production residue and is considered a product.[19]

If the manufacturer could have produced the primary product without producing the material concerned but chose not to do so, this can be evidence that the material concerned is a product and not a production residue. Also, a modification of the production process in order to give the material concerned specific technical characteristics could indicate that the production of the material concerned was a technical choice.

1.2.3 Conditions for a production residue to be a by-product and not waste

Article 5(1) WFD sets out the following four conditions that a production residue must meet in order to be considered a by-product:

- Further use of the substance or object is certain;

- The substance or object can be used directly without any further processing other than normal industrial practice;

- The substance or object is produced as an integral part of a production process; and

[18] Case C-9/00 Palin Granit Oy (2002), para 32.
[19] Case C-235/02 Saetti (2004), para 45.

- Further use is lawful, i.e. the substance or object fulfils all relevant product, environmental and health-protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

These tests are cumulative, meaning that all four conditions must be met. The origin and meaning of the criteria are discussed in the following sections.

What is meant by 'further use is certain'?

'Further use is certain' means that it is not a mere possibility but a certainty; in other words, it is guaranteed that the material will be used. The purpose of this criterion is that if further use were not certain, there would be a risk of the material being disposed of as waste.

In the Palin Granit case[20], the CJEU ruled that 'the holder of leftover stone resulting from stone quarrying which is stored for an indefinite length of time to await possible use discards or intends to discard that leftover stone, which is accordingly to be classified as waste'.

Thus, if the holder of the material in question is storing it for an indefinite time period, further use is not certain.

The other side of this argument is shown in the Avesta Polarit case,[21] where the ruling found that some of the left-over rock from a mining operation could be classified as a by-product where the holder used it for the necessary backfilling of the mine and provided guarantees in relation to the identification and actual use of the leftover rock for that purpose. Similarly, in the Saetti case,[22] certainty of use of the coke production in its entirety and for the same purposes as the refinery products contributed to the material not being considered a waste. Another case considering the 'certainty of use' criterion is the Spanish Manure case[23] where the CJEU held that it was possible for a substance to be regarded as not being waste if it was certain to be used to meet the needs of economic operators other than the economic operator which produced it.

Certainty of further use can, of course, be difficult to prove definitively in advance. However, 'certainty of further use' may be indicated through, for example:

- Existence of contracts between the material producer and subsequent user;

- A financial gain for the material producer;

- A solid market (sound supply and demand) existing for this further use;

[20] Case C-9/00 Palin Granit Oy (2002), para 39.
[21] Case C-114/01 Avesta Polarit (2003).
[22] Case C-235/02 Saetti (2004).
[23] Case C-121/03 Manure case (2005).

- Evidence that the material fulfils the same specifications as other products on the market.

On the other hand, the following are examples of indications that future use is uncertain:

- There is no market for the material;

- Only part of the material is to be used, with the rest to be disposed of (should be initially treated as waste);

- The financial gain for the waste holder is nominal compared to the cost of waste treatment.

Note that the abovementioned criteria provide guidance as to what might indicate that the criterion 'further use is certain/ uncertain' is being met; they are not in themselves additional criteria. As always, all the specific factual circumstances of the case must be considered.

1.2.4 What is meant by 'used directly without any further processing other than normal industrial practice'?

If a production residue has to be treated before it can be used, this may indicate a waste treatment operation. Therefore, the CJEU stressed in its rulings on the definition of waste that a production residue can only be regarded as a by-product if its further use is certain without prior processing.[24] On the other hand, it has to be considered that primary raw materials usually also require some processing before they can be used in production processes. Those treatment techniques that address typical waste-related characteristics of the production residue, such as its contamination with components which are hazardous or not useful, would prevent classification as non-waste. This is to ensure that such operations, which might pose risks to the environment or human health, are monitored under waste management law in accordance with the precautionary principle. On the other hand, a treatment which is normal industrial practice, e.g. modification of size or shape by mechanical treatment, does not prevent the production residue from being regarded as a by-product.

Concerning production residues, the CJEU found in the Niselli[25] case that 'waste' must not be understood as excluding 'all production residues which can be or are re-used in a cycle of production, either without prior treatment and without harm to the environment, or after undergoing prior treatment without, however, requiring a recovery operation listed under the WFD.'

[24] e. g. Case C-194/05 Commission v Italy (2007), para 39.
[25] Case C-457/02, Niselli (2004).

In meeting the criterion of being 'used directly without any further processing other than normal industrial practice', the crucial point is to determine what 'normal industrial practice' is. The following can be considered:

Normal industrial practice can include all steps which a producer would take for a product, such as the material being filtered, washed, or dried; or adding materials necessary for further use; or carrying out quality control. However, treatments usually considered as a recovery operation cannot, in principle, be considered as normal industrial practice in this sense. Some of such processing tasks can be carried out on the production site of the manufacturer, some on the site of the next user, and some by intermediaries, as long as they also meet the criterion of being 'produced as an integral part of a production process'.

Box 2: Example of wastes and non-wastes: Slags and dusts from iron and steel production

Blast furnace slag is produced in parallel with hot iron in a blast furnace. The production process of the iron is adapted to ensure that the slag has the requisite technical qualities. A technical choice is made at the start of the production process that determines the type of slag that is produced. Moreover, use of the slag is certain in a number of clearly defined end uses, and evidence of a demand can be provided. Blast furnace slag can be used directly at the end of the production process, without further processing that is not an integral part of this production process (such as crushing to get the appropriate particle size). This material can therefore be considered a by-product and fall outside the definition of waste.

In contrast, de-sulphurisation slag is produced due to the need to remove sulphur prior to the processing of iron into steel. The resulting slag is rich in sulphur, cannot be used or recycled in the metallurgical circuit and is therefore usually disposed of in a landfill. Another type of example is dust extracted from the steel production process when cleaning the air inside the plant. This is captured in filters via an extraction process. These filters can be cleaned and the metallic content returned to the economic cycle via a recycling operation. Both of these production residues are therefore wastes at the point of production with the iron content extracted from the filters ceasing to be waste once it has been recycled.

1.2.5 What is meant by 'produced as an integral part of a production process'?

The wording of Article 5(1)(c) WFD requires that the substance or object 'is produced' as an integral part of a production process. It can be taken from this that the process where the by-product is generated has to be an integral part of a production process. Therefore a material, which is made ready for further use through an integral part of a production process, can be regarded as a by-product. If a material leaves the site or factory where it is produced in order to undergo further processing, this may be evidence that such tasks are no longer part of the same production process, thus disqualifying it as a by-product.

However, following the cumulative test principle, Article 5(1)(b) WFD must also be taken into account: further treatment operations which are normal industrial practice do not exclude the classification of a production residue as a by-product, irrespective of where such industrial treatment is carried out — on the site of the generator of the material, on the site of the industrial facility using the material, or on an intermediate site.

The following points can be considered by competent authorities in determining in a particular case if a substance or object is 'produced as an integral part of a production process':

- What is the nature and extent of the tasks needed to prepare the material for direct further use? How integrated are these tasks in the main production process?

- Are the tasks that are undertaken as part of 'normal industrial practice' also 'an integral part of a production process'? The relevant Reference document - BREF might be taken into consideration.

There is a need to define the scope of a production process. This is not necessarily an easy task as the examples below illustrate.

Flue gas desulphurisation facilities remove sulphur from the flue gases that are produced when sulphurous fossil fuels are burnt in power plants, in order to prevent these emissions contributing to air pollution and acid rain. The resulting material, flue gas desulphurisation (FGD) gypsum, has the same range of uses as natural gypsum, notably in the production of plasterboard. The process is modified and controlled to produce FGD gypsum with the required characteristics. The generation of gypsum from the residues from flue gas cleaning on the site of the power plant can be regarded as an integral part of a production process (energy generation), and FGD gypsum a by-product.

1.2.6 What is meant by 'further use is lawful'?

The issue of whether it is lawful to use a by-product has arisen in the Avesta Polarit[26] case where the leftover rock was classified as a by-product where the holder used it lawfully for the necessary filling in of the mine. In the Spanish Manure case[27], the CJEU accepted that the use of livestock effluent may fall outside classification as waste if it is used as a soil fertiliser as part of a lawful practice of spreading on clearly identified parcels and if its storage is limited to the needs of those spreading operations.

Article 5(1)(d) WFD clarifies that the further use of the material must be lawful, i.e. the substance or object fulfils all relevant product, environmental and health protection

[26] Case C-114/01 Avesta Polarit (2003).
[27] Case C-121/03 (2005), para. 60.

requirements at EU and at Member States' level for the specific use and will not lead to overall adverse environmental or human health impacts.

Compliance with relevant product, environmental and health protection requirements for the specific use can be relatively easily assessed. It may for example be indicated through:

- A material meeting the technical specifications relevant to its further use, or an object meeting product specifications relevant to its further use;

- If there are no relevant technical specifications for the material, it can still be lawful to use it simply if its use is not specifically forbidden.

The following can indicate that further use is unlawful:

- The material does not meet the technical specifications, or an object does not meet the product specifications required for it to be usable. An example is stone or gravel that does not meet the technical specifications associated with the use of such material for road construction.

- The material is banned from use or the material must be disposed of or recovered as waste by certain obligatory methods. Examples are transformers containing PCBs in oil at levels greater than 50 ppm or wastes containing persistent organic pollutants which have to be treated according to Article 7 of the POP Regulation (EC) No 850/2004.

However, Article 5(1)(d) WFD also requires an assessment to confirm that the use of the production residue does not lead to overall adverse environmental or human health impacts. This should be applied from the standpoint that the use of primary raw materials might also result in certain environmental or health risks. An indication might be gained from an assessment as to whether using and treating the production residue under the provisions of waste legislation would prevent adverse effects on the environment and human health.

1.2.7 How is it determined whether or not a material is a 'by-product'?

Whether a material is a 'by-product' or a 'waste' has to be decided on a case-by-case basis.

A decision tree for determining if a material is a by-product is shown in the following figure:

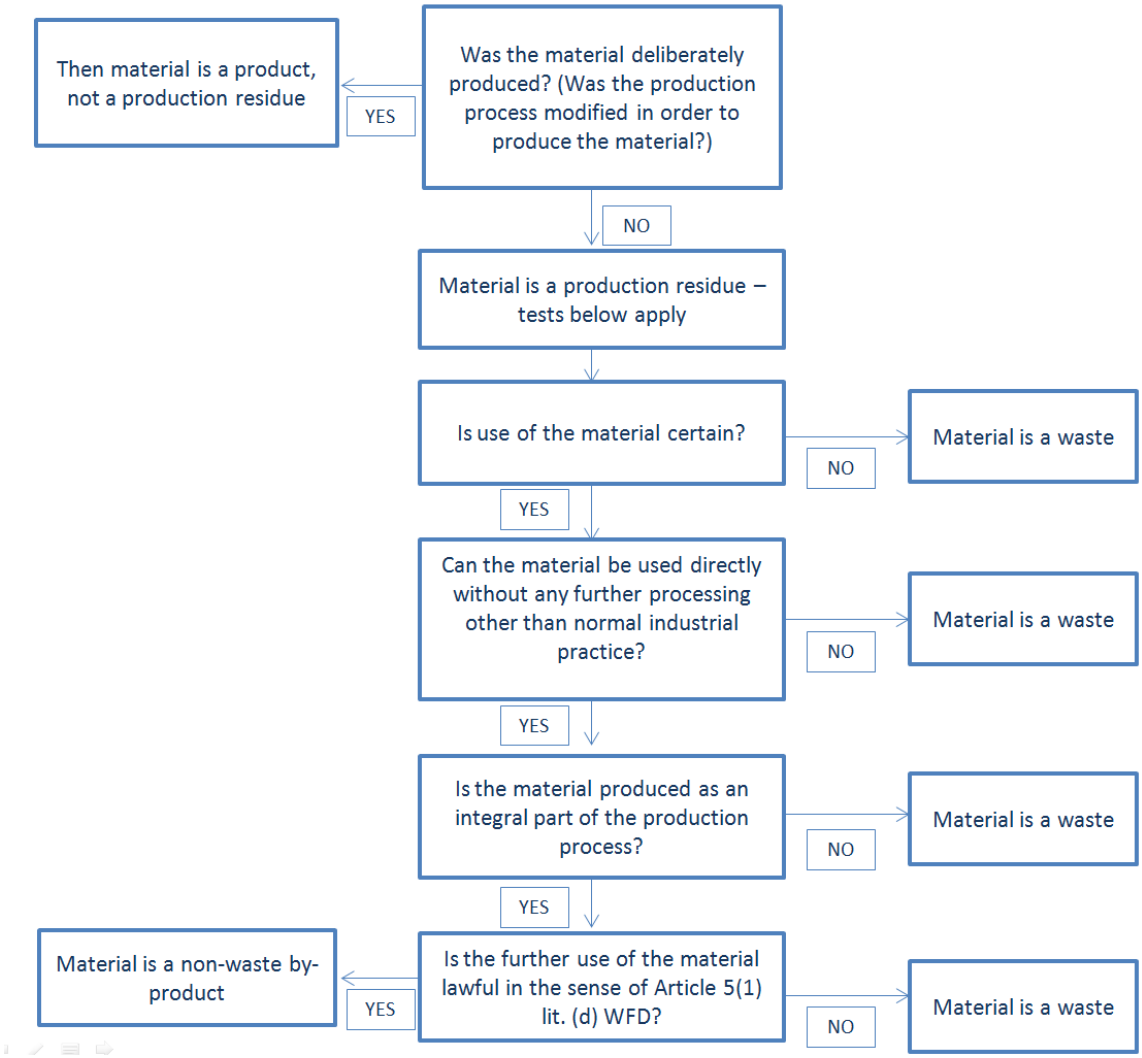

Figure 1: Decision tree for determining whether a material is a by-product [28]

1.2.8 Development of by-product criteria at EU level

The Commission has a mandate under the WFD to define 'by-product' criteria for specific substances or objects through comitology procedure. Additionally, Member States may set out by-product criteria at national level. These criteria need to be based on the four conditions laid down in the WFD and described above.

1.2.9 What is the relationship between achieving 'by-product' status and REACH legislation?

An object considered a by-product under the WFD is in principle subject to REACH Regulation (EC) 1907/2006, since the exclusion provisions of Article 2(2) REACH

Regulation No 1907/2006 apply to 'waste' only. All REACH requirements (e.g. registration and communication obligations) have to be fulfilled where applicable.

It should be noted that Annex V of REACH Regulation includes an exemption from the registration obligation concerning 'by-products'. Note that the term 'by-products' is not defined in REACH Regulation itself. The Guidance Document for Annex V of the REACH Regulation issued by the European Chemicals Agency (ECHA) refers to article 5 of the WFD for the definition of 'by-product'.[29]

However, it should be stressed that the exemption set out in Annex V of REACH Regulation applies only on the condition that by-products are not imported or placed on the market themselves.

1.3 The concept of 'End-of-waste'

1.3.1 Subject and background

The WFD incorporates the concept of end-of-waste (EoW) by setting out conditions whereby substances or objects which meet the waste definition can achieve, after undergoing a recovery operation (including recycling), a non-waste status and thus fall outside the scope of waste legislation.

The concept of end-of-waste follows the hitherto systematic approach of EU waste legislation. In other words, the specific obligations of waste producers and holders remain in force until a recovery operation has been completed in compliance with the aims of the WFD, thus minimising the possible waste-related risks to health and the environment. In this respect, the concept of EoW is closely linked to the understanding of the completion of a recovery process, and the understanding of recovery itself which is now defined in Article 3(15) WFD as 'any operation the principal result of which is waste serving a useful purpose by substituting other materials, or waste being prepared to fulfil that function' (see in detail on the recovery definition under 1.4.4 below, see for impacts on the point where a material ceases to be waste under 1.3.5 below). Note that Recital 22 WFD states that a recovery operation for the purposes of reaching EoW status may be as simple as just checking the waste to verify that it fulfils the EoW criteria.

The approach of the WFD with respect to setting criteria and taking decisions on EoW is twofold:

- For certain specified waste streams (e.g. aggregates, paper, glass, metal, tyres and textiles), EoW criteria can be set at EU level by comitology procedure (Article 6(2)

[28] Modified from European Commission, Communication to the Council and the European Parliament on the Interpretative Communication on waste and by-products (2007).

[29] Available at http://guidance.echa.europa.eu/docs/guidance_document/annex_v_en.pdf, p. 17.

WFD), in accordance with (cumulative) conditions listed in Article 6(1) which are explained in detail below (see Chapter 1.3.2). Once EoW criteria are set at Community level, these are binding for Member States. If they have been set in an EU Regulation, they are also binding for private actors. Member States cannot apply different EoW provisions for the scope for which criteria have been set at EU level, with the exception of adopting more stringent protective measures, under the conditions set out in and pursuant to Article 193 TFEU.

- Where no such criteria have been set, Member States may decide whether certain waste has ceased to be waste, taking into account applicable case law (see 1.3.4 below).

1.3.2 What are the conditions for EoW criteria to be set at EU level?

The cumulative conditions for certain specific waste streams are laid down in Article 6(1)(a) to (d) WFD. These are:

- The substance or object is commonly used for specific purposes;

- A market or demand exists for such a substance or object;

These first two conditions are related. Compliance with these two criteria can be indicated by:

  - The existence of firmly established market conditions related to supply and demand;

  - A verifiable market price being paid for the material;

  - The existence of trading specifications or standards.

- The substance or object fulfils the technical requirements for the specific purpose and meets the existing legislation and standards applicable to products;

  - Compliance with this criterion can be indicated by compliance with established relevant technical specifications or technical standards that are used for virgin materials for the same purpose. The material should be ready for final use and no additional waste treatment steps should be needed.

- The use of the substance or object will not lead to overall adverse environmental or human-health impacts.

- Compliance with this criterion can be indicated by comparing the use of the material under the relevant product legislation with the use of the same material under waste legislation. The following questions are also relevant: Is the product legislation sufficient to adequately minimise the environmental or human health impacts? Would releasing the material from the waste regime lead to higher environmental or health risks?

For further details, see the European Commission's Joint Research Centre (JRC) document on the methodology for setting EoW criteria.[30]

By setting EoW criteria, the authorities have to ensure a high level of environmental protection (see Recital 22 WFD). Releasing recovered materials from the scope of waste legislation should not, in any event, weaken environmental or health protection.

1.3.3 Practical example: EoW for iron and steel scrap

On 31 March 2011, Council Regulation (EU) No 333/2011[31] was adopted containing EoW criteria for iron, steel and aluminium scrap. The document has been in force since 9 October 2011.

The Regulation sets out criteria whereby iron and steel scrap and aluminium scrap (including aluminium alloy scrap) can cease to be waste. The requirements concern both the input and the output of the recovery process as well as treatment processes and techniques. The producer or importer of waste which has ceased to be waste is required to issue a statement of conformity in accordance with a model set out in Annex III to the Regulation.

One aim of setting EoW criteria at EU level is to create legal certainty and a level playing field throughout EU-27. Within Regulation 333/2011, this is emphasised by introducing responsibilities in relation to the role of Conformity Assessment Bodies and Environmental Verifiers (see Article 6(5) of that Regulation) as well as 'independent external verifiers' in third countries, as envisaged under Article 6(6).

1.3.4 What if no EoW criteria have been set at EU level?

In cases where EoW criteria have not been set at EU level (Article 6(4) WFD), Member States may decide at national level whether certain waste has ceased to be waste. This can relate to classes of materials recovered from waste or to single-case decisions. In their decisions, Member States (this means any level within the Member State entrusted with the task of developing such criteria under the national administrative structure) are bound by, the applicable directives and must take account of CJEU case law.

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[30] European Commission, End of Waste Criteria, Final Report (2008), available at http://susproc.jrc.ec.europa.eu/documents/Endofwastecriteriafinal.pdf.

[31] OJ L 94 of 8.4.2011.

Member States have to observe the notification requirements in accordance with Directive 98/34/EC. Any draft technical regulations by Member States on EoW criteria have to be notified so that they can be compliance-checked by the Commission against Article 6(1) WFD and as regards their impacts on the functioning of the Internal Market. This includes *de facto* technical regulations, such as administrative provisions or voluntary agreements (for details, see Article 1 of Directive 98/34/EC). Single-case decisions do not have to be notified, even though they may be based on general administrative provisions for which notification is mandatory.

1.3.5 At what point does a waste, subject to a recovery (including recycling) operation, cease to be waste?

The definitions of waste and EoW, recovery and recycling have to be understood in a coherent way. The moment when a material or substance reaches EoW is simultaneous with the completion of the recovery and recycling processes.

The WFD definition of recovery (see 1.4.4 below) includes not only processes where a material is actually substituting other materials, but also processes preparing a waste material in such a way that it no longer involves waste-related risks and is ready to be used as a raw material in other processes. Generally speaking, the point of completion of a recovery operation may be considered to be the moment where a useful input for further processing, not representing any waste-specific risks to health and the environment, becomes available. Specific legislation on EoW criteria may determine a particular point where waste becomes non-waste (see below).

1.3.6 Does the ‘end-of-waste’ status need to be demonstrated?

Article 6(1) WFD does not foresee a specific point in the chain where EoW has to be demonstrated.

Measures adopted pursuant to Article 6(2) WFD may however determine specific timelines and conditions. For example, in Council Regulation (EU) No 333/2011 on EoW criteria for scrap metal, the transfer of possession from one holder (the ‘producer’ of EoW material) to another holder is a legal condition for reaching the EoW status. Note that it is the material producer, i.e. the person who first transfers the material to another person as non-waste, who is responsible for providing evidence that EoW criteria have been fulfilled via the statement of conformity (see in detail below under 1.3.8, for the case of importing see below under 1.3.9).

1.3.7 How will the application of ‘end-of-waste’ criteria affect recycling targets?

According to Article 6(3) WFD, the EoW status is extended for the purpose of counting recycling and recovery targets under specific waste-stream Directives. A recovered material

which ceases to be waste counts towards recovery (including recycling) targets, unless there are any specific requirements in the waste stream related Directives which would require further monitoring. For example, steel scrap from end-of-life vehicles which meets the EoW criteria is no longer waste: such scrap should count towards the recycling target of the End-of-Life Vehicles Directive 2000/53/EC even before it has been actually reprocessed in a smelter.

1.3.8 Will the concept of 'end-of-waste' mean that reprocessing facilities are no longer classed as recycling facilities?

According to its definition in Article 3(17) WFD, recycling (details may be found below in Chapter 1.4.6) is the reprocessing of waste. If a reprocessing facility (such as a steel works) receives only material certified as fulfilling EoW criteria, its activity is not a recycling or a recovery process, but instead a production process involving non-waste secondary raw materials.

1.3.9 However, it is relevant to note that even in such cases, reprocessing facilities e.g. paper mills, continue to play a key role in the supply/recycling chain as they process secondary raw material into usable products for the end consumer. This processing activity, although it cannot be considered as recycling from a legal point of view, involves *de facto* the same operations as recycling. How will the application of 'end-of-waste' criteria affect imported material?

Regulation (EU) 333/2011 has addressed this issue by stating that for material imported into the EU for which EoW status is claimed, the importer (i.e. the first person within the EU who introduces the material to EU territory) has to demonstrate EoW status for each consignment by issuing a statement of conformity. However, it has yet to be seen whether this will be a general rule for all EoW criteria set at EU level.

1.3.10 What is the relationship between the application of 'end-of-waste' criteria and REACH legislation (or other legislation setting product requirements)?

For a material that achieves EoW status, the associated producer of this material, i.e. the person who places the material on the market for the first time after it ceases being waste, must ensure that the material meets any relevant requirements under REACH Regulation (EC) 1907/2006 and CLP Regulation (EC) 1272/2008. Recovered substances from waste are exempted from registration obligations under the REACH Regulation if the conditions set out in Article 2(7)(d) of the REACH Regulation are met.

However, the obligation to communicate information in the supply chain under REACH applies without restrictions. These conditions are that the substance must have been registered, the recovered substance must have the same chemical identity and properties as the

original one and, finally, that the recycler has all relevant information on the substance. Further information is given in a guidance document published by ECHA.[32]

Additional conditions may apply under specific EU product legislation, e.g. the Construction Product Directive 89/106/EEC. Note that neither the registration under REACH nor any fulfilment of relevant REACH or product legislation requirements alone affects the waste status of a substance or object.

[32] European Chemicals Agency, Guidance on waste and recovered substances, Version 2 (May 2010), available at http://guidance.echa.europa.eu/docs/guidance_document/waste_recovered_en.pdf.

1.4 Definitions of waste prevention and of waste-management options

1.4.1 Subject and background

The following chapter presents definitions relevant to the waste hierarchy. Clear definitions are crucial to understanding the levels of the waste management hierarchy, thus avoiding cases of poor implementation (see Chapter 3 below). Generally, it has to be stressed that just because an operation is given a description by the operator, in line with the terminology of the definitions of the WFD, this does not automatically make the operation such an operation; the specific circumstances of the planned operation must always be considered when assessing whether the definition is fulfilled.

1.4.2 What is meant by ‘waste prevention‘?

Waste ‘prevention’ is defined by Article 3(12) WFD as follows:

‘Measures taken before a substance, material or product has become waste that reduce:

- the quantity of waste, including through the re-use of products or the extension of the life span of products;
- the adverse impacts of the generated waste on the environment and human health; or
- the content of harmful substances in materials and products‘.

Whereas reducing the amounts of waste can be called quantitative waste prevention, reducing the content of harmful substances in materials and products can be termed qualitative waste prevention.

Technically, ‘prevention’ is not a waste management operation because it concerns substances or objects before they become waste. Consequently, obligations under waste management legislation (permits and registration, inspections, requirements for transfrontier shipments) do not apply.

Examples of waste prevention measures are provided in Annex IV to the WFD.

Table 11: Examples of waste prevention measures

Examples of waste prevention measures in Member States
Awareness among businesses: Online information portals on resource-efficient production (including energy efficiency) which are financed by competent authorities. The platform addresses specific production processes and provides case studies and scientific analyses of material savings.
Voluntary agreements with consumer/ producer/ business/ industry: to achieve indicators and targets in resource efficiency, re-use of products, etc.
Environmental Management Systems (EMAS, ISO 14001), e.g. introduction of regional or national programmes for the promotion of EMAS to encourage both public and private organisations to improve their overall environmental performance by, *inter alia*, increasing waste prevention and methodically improving resource efficiency.
Economic instruments which can be realised by the introduction of incentives, taxes, deposits and obligatory payments. This may for example include the introduction of a carbon tax on packaging.
Awareness and information campaigns addressing the public which may be carried out at local, regional and national level. They may address various target groups and preferably priority waste streams of a Member State (e.g. food waste, textile waste, construction&demolition waste …).
Ecolabelling of products which are environmentally friendly, e.g. because of their material and energy-efficient production, the absence of hazardous substances, etc.
Substitution of hazardous substances in products by environmentally-friendly substances to reduce the danger posed by products and waste.
Establishment of leasing systems (e.g. for cars, high-tech office equipment, etc.).
Promotion of re-use through the establishment of re-use centres, online re-use platforms and repair networks for household goods, subsidising second-hand shops.

1.4.3 What is meant by ‘re-use‘?

In Article 3(13) of WFD, the following definition of ‘re-use’ is laid down: ‘Any operation by which products or components that are not waste are used again for the same purpose for which they were conceived‘. Re-use is a means of waste prevention; it is not a waste-management operation. For example, if a person takes over a material, e.g. piece of clothing, directly from the current owner with the intention of re-using (even if some repairing is necessary) it for the same purpose, this comprises evidence that the material is not a waste.

1.4.4 What is ‘preparing for re-use’?

The definition of ‘preparing for re-use‘ (Article 3(16)) is: ‘checking, cleaning or repairing recovery operations, by which products or components of products that have become waste are prepared so that they can be re-used without any other pre-processing.‘ By definition, preparing for re-use is a specific case of recovery (see 1.4.5 below).

The key difference between ‘re-use‘ and ‘preparing for re-use‘ is that in the former case the material or object has not become a waste, whereas in the case of ‘preparing for re-use’, the material in question has become waste in the meaning of the waste definition (see Chapter 1.1 above; in particular the examples given under 1.1.2.3). Examples for preparing for re-use comprise repairing bicycles, furniture, or electrical or electronic equipment which have been previously discarded by their owners.

1.4.5 What is meant by ‘recovery‘?

The definition of ‘recovery’ is one of the key concepts of the WFD.

On the one hand, ‘recovery’ and the opposite term ‘disposal’ (negatively defined as operations which are not recovery, see below under Chapter 1.4.8) together comprise ‘waste treatment’ (see Article 3(14) WFD). Any waste treatment can only be either a recovery operation or a disposal operation; the CJEU has explicitly stated that no operation can be classified as disposal and recovery at the same time.[33]

Since classification of an operation has significant consequences not just for adherence to the waste hierarchy (see below under Chapter 3), but also for every waste management decision, the distinction between recovery and disposal is of utmost importance in achieving compliance with the definitions provided in Articles 10 and 12 of the WFD. In a nutshell, disposal operations primarily result from waste management operations based on getting rid of waste, whereas the principal result of a recovery operation 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‘ (see Article 3(15) WFD).

In practice, it may be difficult to distinguish in some cases whether an operation actually meets this definition. In 2004, a study was published on behalf of the European Commission, assessing current waste-treatment operations in Europe as they occur in practice and identifying criteria which could help with correct classification of operations.[34]

On the other hand, recovery is divided into three sub-categories: preparing for re-use (see Chapter 1.4.5), recycling (see Chapter 1.4.6), and other recovery (see Chapter 1.4.7). Examples of the sub-categories may be found in the respective chapters; see in particular the distinction between recycling and recovery in Chapter 1.4.6 below.

This definition of recovery has been newly introduced into the WFD, taking as its starting point CJEU case law, where the approach of substitution as a precondition for recovery was developed in the rulings ASA[35] and Cement kiln.[36]

The fact that the waste has to serve a useful purpose 'as a principal result' of the recovery operation is an important aspect of distinguishing recovery from disposal operations. The CJEU has stated with respect to the incineration of waste in cement kilns that 'it follows from the term *principally used* (...) that the waste must be used principally as a fuel or other means of generating energy, which means that the greater part of the waste must be consumed during the operation and the greater part of the energy generated must be recovered and used.'[37] The criterion was introduced to prevent misuse and sham recovery.

According to the new recovery definition in the WFD, the substitution achieved, which is crucial for waste recovery, can take place not just in the plant where the waste is being treated but also 'in the wider economy'. This aims to facilitate the classification of waste incinerators with efficient energy generation as recovery operations.[38] Classification of waste incineration facilities dedicated to the processing of municipal solid waste is to be based on the R1 formula[39] of Annex II.

It should be noted that, according to the definition in Article 3(15) WFD, these provisions apply not only where a material is actually substituting other materials, but also to processes preparing a waste material in such a way that it no longer involves waste-related risks and is ready to be used as a raw material in other processes.

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33 Case C-6/00 ASA (2002), para 63.

34 http://ec.europa.eu/environment/waste/studies/recovery_disposal.htm. Note that this study was based on existing case-law and its finding might be reviewed in the light of the new 'recovery' definition set out in the WFD.

35 Case C-6/00 ASA (2002).

36 Case C-228/00 Commission v Germany (2002).

37 Case C-228/00 Commission v Germany (2002), para 43.

38 http://ec.europa.eu/environment/waste/framework/pdf/guidance.pdf.

39 R1 operation means an operation meeting the energy efficiency requirements specified in Annex II to the WFD (so called 'R1 formula' contained therein).

In certain production processes such as co-processing, waste can be used in an operation combining two waste management recovery options at the same time. The energy content of the waste is recovered (R1 operation) as thermal energy, thus substituting fuels, while the mineral fraction of the waste can be integrated (hence recycled) in the matrix of the product or material produced, e.g. cement clinker, steel or aluminium (R4 or R5 operation, see a list of recovery operations in Annex II to WFD).

Annex II to the WFD sets out a non-exhaustive list of recovery operations. An operation may be a recovery operation, even if it is not listed in Annex II, if it complies with the general definition of recovery.

1.4.6 What is meant by 'recycling'?

The definition of 'recycling' under Article 3(17) WFD is: 'any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.'

The common idea behind recycling is that a waste material is processed in order to alter its physico-chemical properties allowing it to be used again for the same or other applications. It is the explicit goal of the WFD that the EU should become more of a 'recycling society', seeking to avoid waste generation and to use waste as a resource (see Recital 28).

Specific waste management activities that are classed as recycling under the WFD include (but are not limited to):

- Recycling of materials: e.g. plastic granulated and pelletised for extruding or moulding; crushed waste glass graded for blasting, sorting of waste paper to meet end-of-waste criteria; and

- Production of compost that meets EoW criteria.[40]

Recycling includes any physical, chemical or biological treatment leading to a material which is no longer a waste. Article 3(17) WFD does not require any particular characterisation of the processing or reprocessing activity, as long as it serves the objective of

[40] EoW criteria for compost from biowaste at EU level are currently under discussion . For the purposes of this document, compost that has not ceased to be waste under any existing national standards and is used as a fertiliser is being recovered. However, regarding the question at what point a compost is *recycled*, Article 2(6) of the recently adopted Decision on recycling targets might be useful; it states 'Where the target calculation is applied to the aerobic or anaerobic digestion of biodegradable waste, the input to the aerobic or anaerobic treatment may be counted as recycled where that treatment generates compost or digestate which, following any further necessary reprocessing, is used as a recycled product, material or substance for land treatment resulting in benefit to agriculture or ecological improvement'.

generating a material which is used for the original or for other purposes, and thus of closing the economic material circle. Consequently, the reprocessing into materials that are to be used as fuels or for backfilling operations is excluded from recycling (and, in terms of the WFD, represent 'other recovery', see 1.4.7 below). Under the waste hierarchy of Article 4(1) WFD (see under Chapter 3 below), preference is given to recycling ahead of those other forms of recovery.

It follows from the WFD recycling definition that only the reprocessing of waste into products, materials or substances can be accepted as recycling. Processing of waste which still results in a waste which subsequently undergoes other waste recovery steps would not be considered recycling, but pre-treatment prior to further recovery. Such an operation would be categorised as 'preparation prior to recovery or disposal' or 'pre-processing' prior to recovery. This would include operations like dismantling, sorting, crushing, compacting, pelletising, drying, shredding, conditioning, repackaging, separating, blending or mixing if the material or substance resulting from such operations is still waste. These activities do not sit on any particular rung of the waste hierarchy (Article 4 WFD) and instead can be regarded as 'precursors' to specific types of recovery.

For example, biological reprocessing of waste in order to stabilise the waste before a backfilling operation is to be classified as a pre-treatment prior to 'other' recovery (see under 1.4.7 below), and not as a recycling operation.

It should be noted that the recycling definition in the WFD is slightly different from the recycling definition used in Directives related to specific waste streams (to understand this term, see Chapter 2.1). Definitions of the term 'recycling' in these Directives, which are different from that of the EU Waste Framework Directive, remain in force, in particular for the calculation of targets.

1.4.7 What is meant by 'other recovery'?

Other forms of recovery are not mentioned in the definition section but they do feature in Article 4(1) WFD, where recycling is ranked above other forms of recovery. 'Other recovery' is any operation meeting the definition for 'recovery' under the WFD but failing to comply with the specific requirements for preparation for re-use or for recycling.

Examples of other recovery operations are:

- Incineration or co-incineration where the principal use of the waste is as a fuel or other means to generate energy. It is a waste management operation with energy recovery, classified as R1 in Annex II to the WFD. This contrasts with the incineration of waste without energy recovery, classified as a disposal operation D10 in Annex I to the WFD. To determine whether incineration in incinerators dedicated to the incineration

of municipal solid waste should be classified as R1 or D10 according to energy efficiency criteria, please consult the Commission's Guidance Document[41];

- Backfilling operations meeting the recovery definition and in compliance with Articles 4 and 13 of the WFD.[42]

1.4.8 What is meant by 'disposal'?

Under Article 3(19) WFD, the definition of 'disposal' is: 'any operation which is not recovery even where the operation has as a secondary consequence the reclamation of substances or energy.'

It follows from this definition that any waste treatment operation which does not meet the criteria of the recovery definition is by default considered to be disposal. The wording 'even where the operation has as a secondary consequence the reclamation of substances or energy' reflects by contrast the idea that any recovery operation must meet the criterion of 'the principal result' being 'waste serving a useful purpose' by substituting material which would otherwise have been used for that purpose.

Annex I to WFD sets out a non-exhaustive list of disposal operations; these include landfilling, incineration with low energy recovery, and injection into land.

Table 12: Examples of waste management operations

Examples of waste management operations
Recovery: comprises the sub-categories of preparing for re-use, recycling, and other recovery. Please consult the sub-categories for examples.
Preparing for re-use: Cleaning, checking and repairing used products which have become waste so that they can be used again (e.g. repairing bicycles, furniture or electrical and electronic equipment).

41 European Guidance for the use of the R1 energy efficiency formula for incineration facilities dedicated to the processing of Municipal Solid Waste according to Waste Framework Directive 2008//98/EC, Annex II, not yet published.

42 'Backfilling' is explicitly accepted by Article 11(2) (b) WFD as a recovery operation. However, the WFD itself does not provide a definition for backfilling. Article 2(6) of Commission Decision establishing rules and calculation methods for verifying compliance with the targets set in Article 11 (2) of Directive 2008/98/EC states that 'backfilling' means a recovery operation where suitable waste is used for reclamation purposes in excavated areas or for engineering purposes in landscaping and where the waste is a substitute for non-waste materials'. It should be stressed that one of the conditions of this definition is that the operation concerned meets the recovery definition of Article 3(15) WFD, which has to be assessed depending on the specific circumstances of the operation planned in the light of the objectives of the WFD. The fact that an operation is referred to as 'backfilling' by the operator does not automatically make the operation a recovery operation.

Examples of waste management operations
Recycling: Use of waste as a raw material in processes such as paper, glass and metal production, including preparing waste to fulfil that function.
Other recovery: Energy recovery (incineration and co-incineration whereby generating energy is the principal result — in the case of facilities dedicated to the incineration of municipal solid waste that comply with the criteria defined using the R1 energy efficiency formula in Annex II to WFD); processing of fuels; backfilling (including for example in salt mines). For all these operations it is necessary that all conditions in Article 3(15) and Article 13 of WFD are met.
Disposal: Landfilling (even when landfill gas is used for energy recovery); incineration and co-incineration not meeting the criteria for being defined as recovery (in case of facilities dedicated to the incineration of municipal solid waste not complying with the criteria defined using the R1 energy efficiency formula in Annex II to WFD), backfilling where not meeting the recovery definition.

1.5 Definitions in relation to waste collection

1.5.1 What is meant by 'collection' and 'separate collection'?

'Collection' is defined by Article 3(10) WFD as: 'the gathering of waste, including the preliminary sorting and preliminary storage of waste for the purposes of transport to a waste treatment facility.'

The moment of collection is the beginning of any waste management processes which are covered by the WFD. A treatment facility is to be understood in terms of the definition of 'treatment' in Article 3(14) WFD, namely as a facility where 'recovery or disposal operations, including preparation prior to recovery or disposal', are carried out.

'Separate collection' is defined by Article 3(11) WFD as a collection where a waste stream is kept separate by virtue of its type or nature so as to facilitate a specific treatment (see Chapter 4 below for details).

1.5.2 What are the different types of storage recognised by the WFD?

Recital 15 of WFD distinguishes between different types of storage of waste:

- The temporary storage of waste pending its collection;
- The storage of waste pending treatment; and
- The storage of waste as part of the collection process.

The distinction between the terms is relevant, since Article 23 and 26 WFD, on permit and registration requirements respectively, clearly distinguish between collection (including temporary storage) and treatment operations. The latter includes storage pending recovery and disposal operations, which are classified as entries R13 of Annex II and D15 of Annex I, respectively, to the WFD.

1.5.2.1 The preliminary storage of waste, pending collection

The preliminary storage of waste pending its collection takes place at the site of generation. This preliminary storage, pending collection on the site where the waste is produced, is not a waste treatment operation according to entries D15 Annex I (together with footnote (***)) and R13 Annex II (together with footnote (*****)) to the WFD.

1.5.2.2 The (preliminary) storage of waste as part of the collection process

Recital 16 of the WFD states that the 'preliminary storage' referred to as part of the 'collection' definition (Article 3(10) WFD) is understood as 'storage pending its collection in facilities where waste is unloaded in order to permit its preparation for further transport for recovery or disposal elsewhere'. This means that 'preliminary storage' is storage at a facility other than the one which produced the waste in the first place. The distinction between preliminary storage of waste pending collection, on the one hand, and the storage of waste pending treatment, on the other, should in view of the objective of this Directive be made according to the type of waste, the quantity and time period of storage and the treatment objective of the collection. This distinction should be made by the Member States.

1.5.2.3 The storage of waste pending treatment

The storage of waste pending treatment is storage at the facility where the waste will undergo a disposal or recovery operation or its storage at any other point subsequent to its collection point; e.g. a waste transfer station which would constitute a D15 or R13 operation. The storage of waste pending treatment is a waste treatment operation according to entries D15 Annex I and R13 Annex II to the WFD. If as a general rule waste is stored for more than three years pending recovery, or for more than one year pending disposal, the site for deposing waste is defined as a landfill site according to Article 2(g) of the Landfill Directive 1999/31/EC.

1.5.3 For which collecting activities are permits required under the Directive?

According to Article 23 WFD, permits are required for waste treatment operations, i.e. disposal or recovery operations set out in the WFD. A permit is not required for waste collection and preliminary sorting and storage, which is regarded as part of collection. Pursuant to Article 26 WFD, Member State competent authorities are obliged to keep a register of those establishments or undertakings collecting waste on a professional basis that are not obliged to hold a permit.

Provided the requirements of Article 23 WFD are met, any permit pursuant to EU or Member States legislation can be combined with the Article 23 permit, in order to avoid unnecessary bureaucratic burden.

Article 24 WFD stipulates that Member States may waive the requirement for a permit in the case of:

- Disposal of non-hazardous waste on the site where it is produced. BAT should be considered in such an instance; or

- Recovery of waste.

In such cases, Member States must set out the types and quantities of waste that are covered by such an exemption, as well as the treatment method to be used (Article 25 WFD). Such exemptions must still ensure waste is treated without endangering human health or harming the environment. Where hazardous waste for recovery is exempted, additional requirements shall be set out.

1.5.4 For which collection activities is registration required under the Directive?

According to Article 26 WFD, registration is required for:

- Establishments/undertakings which collect or transport waste on a professional basis;
- Establishments/undertakings that have received an exemption from permit requirements for recovery/disposal of their own waste on their own site;
- Dealers or brokers.

This registration can be in accordance with any existing systems in operation by Member States. Where possible, competent authorities should use existing records for the purposes of registration.

In terms of collecting or transporting waste, the wording 'on a professional basis' means that establishments or undertakings carry waste normally and regularly.[43] The CJEU found in the Tombesi case[44] that 'establishments or undertakings which collect or transport waste on a professional basis or which arrange for the disposal or recovery of waste on behalf of others, where not subject to authorisation, are to be registered with the competent authorities'.

Examples of a waste collection activity which is usually conducted on a professional basis and do require registration are the collection of waste from farms by a waste contractor on a scheduled route and construction companies collecting construction and demolition waste.

By contrast, waste collection schemes which are not conducted on a professional basis are not subject to registration; Recital 17 WFD lists the following examples of such schemes: waste medicines collected by pharmacies, take-back schemes in shops for consumer goods and community schemes in schools.

Any waste collection activity which is not conducted on a professional basis is exempted (according to Article 20(2) WFD) from the requirements in relation to hazardous waste of Articles 19 (labelling) and 35 (record keeping) WFD.

[43] Case C-270/03, Commission/Italy (2005).
[44] Joined cases C-304/94, C-330/94, C-342/94 and C-224/95, Tombesi et al (1997).

For more information and best-practice examples on permitting and registration, see guidance at: http://ec.europa.eu/environment/waste/framework/inspections.htm.

2 Exclusions from Scope

2.1 Background of exclusions, types of exclusions under WFD

The revised WFD seeks to clarify what is covered by the Directive and what is not. The exclusions in Article 2(1) to Article 2(3) refer to items which would fulfil the definition of waste (see Chapter 1.1 above) yet for various reasons should not be subject to the provisions of the WFD.

Compared to the previous WFD (Directive 2006/12/EC) exemptions have been modified and there are more of them. Some of the exclusions are described in this chapter.

The WFD provides for a range of regulatory approaches for exclusions:

- Article 2(1) lists exclusions from the scope of the Directive;

- Article 2(2) excludes items 'to the extent that they are covered by other Community legislation'. In comparison with previous legislation, Article 2(2) clarifies that only EU legislation and not Member States' legislation may provide exclusions para.. [45] Article 193 TFEU (Ex-Article 176 EC Treaty) allows Member States to maintain or introduce more stringent protective measures.

Article 2(3) WFD excludes sediments 'without prejudice to other Community legislation'. This provision is explained in Chapter 2.6.

A distinction must be drawn between exclusions, on the one hand, and either specific rules for particular instances or the management of particular categories of waste as laid down in specific EU Directives that are supplementary to the WFD, as provided for in Article 2(4) WFD. These Directives on waste treatment operations or on waste streams complement the WFD in their scope. With regard to the WFD, each specific directive has *lex specialis* status. In cases where the definitions in these Directives depart from those in the WFD (see e.g. the definition of 'treatment' in the ELV Directive 2000/53/EC, or the definition of 'recycling' in the Packaging Directive 94/62/EC), the definitions of the specific directives apply.[46] The WFD, however, applies in all cases that are not subject to an exhaustive rule or other exclusion by a specific Directive.

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[45] In its case law on Directive 75/442, the CJEU also held that for Community or national legislation to be regarded as 'other legislation', it must contain precise provisions organising the management of waste and ensure a level of protection which is at least equivalent to that resulting from Directive 75/442. See Case C-114/01 Avesta Polarit (2003), para 61; Thames Water (2007) para 34; Case C-121/03, Commission/Spain, "Manure case" (2005), para 69.

[46] Case C-444/00 MayerParry (2003), para 57.

2.2 Exclusion for land (*in situ*), unexcavated contaminated soil and buildings (Article 2(1)(b) WFD)

2.2.1 Subject and background

Article 2(1)(b) WFD excludes from the Directive's scope 'land (*in situ*) including unexcavated contaminated soil and buildings permanently connected with land'.

'*In situ*' essentially means in the original position; the exclusion relates to land, soil and buildings that are in their original position and have not been disturbed, for example through excavation or demolition.

The background to this exclusion, which has been newly introduced into the WFD, is the 'van de Walle' ruling[47] where the CJEU found that the holder of hydrocarbons which are accidentally spilled and which contaminate soil and groundwater 'discards' this material. As a result, such hydrocarbons were found to be classified as waste; accordingly, contaminated soil became subject to the waste regime. This has led to discussions on how to coordinate waste legislation with soil protection legislation. Under the current WFD, such contaminated soil would be excluded from the scope of the WFD and the soil protection measures would apply to it.

2.2.2 How is the term 'contaminated soil' to be understood?

The term 'contaminated soil' is not defined in the WFD or in other legal acts at Community level. A minimum criterion to be applied by competent authorities to determine whether soil is considered to be contaminated is whether it exhibits any of the 'properties of waste which render it hazardous' as per Annex III to the WFD. Furthermore, the term 'contaminated' can be clarified by comparing it to its opposite, the term 'uncontaminated soil' in Article 2(1)(c) WFD. From the wording of that provision 'uncontaminated soil and other naturally occurring material' it can be derived that uncontaminated soil essentially relates to virgin soil or soil that is equivalent to virgin soil. In the absence of EU standards, national soil legislation (where it exists) can be consulted to determine the type and level of trace contamination at which a soil might be considered equivalent to virgin soil.

2.2.3 Examples of exclusions under this provision

- Unexcavated contaminated soil beneath the forecourt of a service station;
- Asbestos tiles on the roof of a building;
- A greenfield site prior to construction.

[47] Case C-1/03 van de Walle (2004).

2.3 Exclusion for excavated soil and other naturally occurring material (Article 2(1)(c) WFD)

2.3.1 Subject and background

The exclusion under Article 2(1)(c) WFD relates to 'uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which it was excavated'.

The background to this exclusion is that a waste management regime was commonly regarded as inappropriate for this kind of material, even if the definition of discarding is fulfilled.

In order to be excluded from the scope of the WFD, the requirements here are three-fold. The material must be:

- uncontaminated;
- excavated during the construction activities;
- certain to be used in its natural state for construction purposes on the same site.

The waste management regime applies to any material used in construction that does not cumulatively meet these three criteria. However, it is possible to assess whether such material meets the criteria for by-products and end-of-waste (see Chapter 1.3 above), as emphasised by Recital 11 of the WFD.

2.3.2 What is meant by 'uncontaminated soil'?

'Uncontaminated soil' essentially relates to virgin soil or soil that is equivalent to virgin soil (see Chapter 2.2.2 above). Other naturally occurring material means soil, stones, gravel, rock, etc. Man-made material like concrete, or items that have been modified by man, e.g. wooden materials, are not excluded from the scope of the WFD.

2.3.3 Examples of certainty of use of a material in the sense of Article 2(1)(c) WFD

In order to be excluded, the excavated material must be used in a construction activity on the site. Certainty of use could be inferred from, for example:

- Construction plans or designs for the site in question. These may contain estimates of excavated amounts and whether there will be a surplus or deficit of such material;

- Planning-permission conditions;
- Construction and demolition waste management plans, if required;
- For larger scale developments, the Environmental Impact Assessment (EIA).

2.3.4 What does ‘on the site’ mean?

A construction site will usually be defined in relation to the associated planning permission.

Examples of what can be considered to be ‘on the site’ include:

- A construction project for a 100 km motorway, where excavated material from one section of construction is used in its natural state in the same construction section.
- Soil or other such material temporarily taken from the site but returned later and used on the site for the purposes of construction (the transport operation as such is not relevant).

2.4 Exclusion for agricultural and forestry material (Article 2(1) (f) WFD)

2.4.1 Subject and background

Article 2(1)(f) WFD excludes ‘faecal matter, if not covered by paragraph 2(b), straw and other natural non-hazardous agricultural or forestry material used in farming, forestry or for the production of energy from such biomass through processes or methods which do not harm the environment or endanger human health‘.

2.4.2 Faecal matter and the relationship to the animal by-products (ABP) exclusion of Article 2(2) lit. (b) WFD

Faecal matter consists of faeces and urine excreted by animals in an agricultural or forestry setting. It does not include human faecal matter.

The exclusion of Article 2(1) lit. (f) WFD applies to faecal matter only where the animal by-products (ABP) exclusion of Article 2(2)(b) WFD does not cover the material. The idea behind this structure was to link the exclusion unambiguously to a condition constituting an exception, not (as one could also understand the paragraph) to create an exception from the exception. This means in essence that ABP are in principle covered by the exclusion in Article 2(2)(b) WFD, except for faecal matter from farming, which is covered by the exclusion in Article 2(1)(f) of WFD.

2.4.3 Straw and other 'natural non-hazardous' material

According to the exclusion, the (non-) hazardousness of the material is a decisive criterion; it has to be assessed according to the criteria of Article 3(2) and Annex III to WFD. Examples of materials from agriculture or forestry that could be considered natural non-hazardous materials are:

- straw from grain and other crops;
- cut grass;
- natural wood, wood off-cuts, wood chips, saw-dust, etc.;
- other biomass.

2.4.4 Processes which do not harm the environment or endanger human health

The provision 'not harming the environment or endangering human health' applies to the entire paragraph, namely any use of the specified materials in agriculture or forestry, as well as their use to produce energy.

The minimum standard for not harming the environment or endangering human health is compliance with the standards of EU environmental legislation.

2.5 Animal by-products (ABP) exclusion (Article 2(2) (b) WFD)

2.5.1 Subject and background

Under Article 2(2)(b) WFD, 'animal by-products including processed products covered by Regulation (EC) No 1774/2002, except those which are destined for incineration, landfilling or use in a biogas or composting plant' are excluded from WFD to the extent that they are covered by that Regulation.

Note that Regulation (EC) 1774/2202 was repealed with effect from 4 March 2011 by ABP Regulation (EC) No 1069/2009. Article 54, Paragraph 2 of Regulation (EC) No 1069/2009 states that 'References to Regulation (EC) No 1774/2002 shall be construed as references to this Regulation and shall be read in accordance with the correlation table laid down in the Annex'.

ABP Regulation (EC) 1069/2009 aims to exclude animals which have died (other than those slaughtered as fit for human consumption) and other condemned materials from the animal feed chain and to achieve safe processing and disposal of animal by-products

produced in the Union. Under the ABP Regulation, only materials derived from animals declared fit for human consumption following veterinary inspection, subject to the restrictions set out in Article 11, may be used for the production of feed. Section 4 of the ABP Regulation 1069/2009 distinguishes between three categories of material (with material of category 1 involving the most risks) and provides for a distinct system of treatment for each category.

2.5.2 Basic approach and counter exclusion for ABP destined for waste treatment

The intention was to clarify in the new WFD the scope of waste legislation with regard to ABP that are subject to the ABP Regulation, on the grounds that duplication of rules should be avoided and that ABP should be excluded from the scope of the WFD wherever they are intended for uses that are not considered waste operations (see Recitals 12 and 13 of the WFD).

Consequently, ABP in the sense of the ABP Regulation are excluded but the exclusion contains a counter-exemption for those ABP which are destined for incineration, landfilling or use in a biogas or composting plant, since these are typical waste-treatment operations with environmental risks which have to be monitored under waste legislation. This essentially means that determining whether an ABP covered by Regulation (EC) No 1069/2009 is subject to waste legislation depends on its fate.

In practice, the assessment as to whether a material is handled under the ABP regime or under waste management legislation is sometimes complex. The outcome of such an assessment may have considerable repercussions, possibly starting with the question of the appropriate competent authority in the Member States. As an example, the approach for catering waste is described below.

2.5.3 Example of catering waste

Box 3: Example of catering waste

ABP Regulation (EC) No 1069/2009 excludes catering waste (note that the definition of waste is substantially the same as the one under the WFD, see Article 3 No 27 ABP Regulation (EC) No 1069/2009) from its scope, except under certain conditions. In all cases where these conditions are not met, material meeting the WFD definition of waste will be subject to waste management legislation and not the ABP Regulation.

The conditions under which catering waste is subject to the ABP Regulation are as follows:

- If catering waste originates from a means of transport operating internationally;
- If catering waste is destined for feeding purposes;
- If catering waste is destined for processing by pressure sterilisation or other methods for processing animal by-products, in particular as regards the parameters to be applied for those processing methods, notably the time, temperature, pressure and size of particles; or for transformation into biogas or for composting.

Furthermore, as long as the material is destined for one of the treatment methods listed in Article 2(2)(b) WFD, it is again subject to waste management legislation. For catering waste originating from a means of transport operating internationally, landfilling is indeed the only allowable treatment under the ABP Regulation (see Articles 8(f) and 12(d) ABP Regulation (EC) No 1069/2009). Thus, it is subject to the WFD.

2.5.4 Is burning of ABP and derived products as a fuel excluded from the scope of the WFD?

The ABP Regulation distinguishes between ABP which are waste and ABP which are used as a fuel (see for example Article 12(a), (b) and (e) ABP Regulation). Whether for example the incineration of ABPs (including 'derived products' under ABP legislation, such as tallow) as a fuel is subject to waste legislation depends in the first place on whether the material meets the definition of waste or that of a 'by-product' under the WFD (see Chapters 1.1, 1.2 above). If it is subject to waste legislation, the incineration operation must comply with the requirements of the Waste Incineration Directive 2000/76/EC.

As explained above, the list of waste treatment operations in Article 2(2)(b) WFD subject to the counter exclusion contains 'incineration' only while 'co-incineration' is not mentioned.

However, the term 'incineration' has to be understood as a typical waste-treatment operation, thus including co-incineration even if not explicitly mentioned. Therefore, ABPs which are waste and intended for either incineration or for co-incineration are included in the scope of the WFD, and these operations should consequently be carried out in accordance with the Waste Incineration Directive 2000/76/EC.

2.6 Dredging sediments exclusion (Article 2(3) WFD)

2.6.1 Subject and background

The exclusion of Article 2(3) WFD relates 'without prejudice to obligations under other relevant Community legislation' to 'sediments relocated inside surface waters for the purpose of managing waters and waterways or of preventing floods or mitigating the effects of floods and droughts or land reclamation (...) if it is proved that the sediments are non-hazardous'.

Obligations under other Community legislation, namely arising from the Water Framework Directive, are not affected by the exclusion.

2.6.2 Requirements for sediments

Non-hazardous dredging sediment is excluded from the scope of the WFD only where it is put elsewhere within surface waters for the purposes (only) of:

- managing waters and waterways;
- preventing floods;
- mitigating the effects of floods and droughts; or
- land reclamation.

Excluded is sediment from dredging. Thus, the exclusion for the purpose of managing waters, etc. applies not to the dredging but to the relocation of the sediment. If sediments are further used outside water bodies, the criteria for exclusion under Article 2(3) WFD are not fulfilled and waste management legislation applies. In all cases the sediments must be non-hazardous, taking into account the criteria of Article 3(2) WFD.

3 Waste hierarchy

The waste hierarchy is the cornerstone of European waste policies and legislation. Its primary purpose is to minimise adverse environmental effects from waste and to increase and optimise resource efficiency in waste management and policy.

3.1 What is the impact of the new waste hierarchy and what has changed compared with the previous hierarchy?

The new waste hierarchy, as laid down in Article 4 WFD, is a priority order for waste management, reflecting a general approach under EU waste management law. The hierarchy sets out five possible ways of dealing with waste (although, technically, 'prevention' is not a waste-management measure because it concerns substances or objects before they become waste) and prioritises these measures as follows:

- Prevention;
- Preparing for re-use;
- Recycling;
- Other recovery, e.g. energy recovery; and
- Disposal.

This prioritisation lays down a priority order of what constitutes the best overall environmental option in waste legislation and policy.

The most important modifications with respect to the previous waste hierarchy of Directive 2006/12/EC are as follows:

- The former waste hierarchy, which contained prevention, recovery and disposal, has been expanded to five steps;
- 'Preparing for re-use' has been introduced as a new concept;
- Previous waste legislation gave equal importance to preparation for re-use, recycling and other recovery. In line with the aims of improving resource efficiency and moving the EU closer to a recycling society (see Recital 28), the new WFD distinguishes between these, and now ranks preparing for re-use above recycling, while recycling is ranked above other types of recovery.

Applying the waste hierarchy has been made mandatory for the Member States, which shall take measures to encourage the options that deliver the best overall environmental outcome. This means that for special waste streams Member States are allowed to depart from the waste hierarchy when this is justified by life-cycle thinking on the overall impacts of the generation and management of those specific waste streams (see Chapter 3.3. below).

3.2 How does life-cycle thinking relate to the waste hierarchy?

Life Cycle Thinking (LCT) is a conceptual approach that considers upstream and downstream benefits and trade-offs associated with goods and services. LCT takes into account the entire life cycle, starting with the extraction of natural resources and including material processing, manufacturing, marketing, distribution, use, and the treatment of waste. By introducing life-cycle thinking into waste policies, the WFD integrates waste policies, when departing from the waste hierarchy, into the broader framework of reducing environmental pressures and increasing resource efficiency. Over their life-time, products (goods and services) can contribute to various environmental impacts.

The waste hierarchy has been drawn up taking life cycle approaches implicitly into account. Following the waste hierarchy should therefore lead to waste being dealt with in the most resource-efficient and environmentally sound way. Member States can only deviate from the waste hierarchy for specific waste streams and when this is justified by life-cycle thinking. It should be underlined that the Waste Framework Directive only promotes the use of LCT when *departing* from the waste hierarchy for specific waste streams. When Member States take decisions in line with the waste hierarchy, this does *not* need to be justified by life-cycle thinking on the overall impacts of the generation and management of the waste concerned.

3.3 Is the waste hierarchy legally binding and under what conditions are departures from the hierarchy allowed?

Pursuant to Article 4(1) WFD, the waste hierarchy shall apply ‘as a priority order in waste prevention and management legislation and policy’.

It should be noted that Article 4(2) WFD gives Member States a degree of flexibility. They are required to encourage those options that deliver the best environmental outcome. This means that achieving this aim may entail departing from the priority order of the waste hierarchy for specific waste streams. Moreover, there has to be a justification for deviating from it and any departure from the hierarchy must be justified on grounds of ‘life-cycle-thinking’. Article 4(2) WFD allows departure from the hierarchy in cases where LCT indicates that the observance of the hierarchy leads to higher environmental impacts. To sum up, derogating from the priority order should comprise an exemption for individual waste streams and needs to be justified on the basis of life-cycle thinking. The third paragraph of Article 4(2) WFD provides that ‘Member States shall take into account the general

environmental protection principles of precaution and sustainability, technical feasibility and economic viability, protection of resources as well as the overall environmental, human health, economic and social impacts' when applying the waste hierarchy. When applying the waste hierarchy, Member States are required to ensure that the development of waste legislation and policy is a fully transparent process, observing existing national rules about the consultation and involvement of citizens and stakeholders.

Practical examples regarding the application of Life Cycle Assessment (LCA) and Life Cycle Thinking (LCT) can be found at: http://lct.jrc.ec.europa.eu/pdf-directory/ReqNo-JRC65850-LB-NA-24916-EN-N.pdf.

3.4 Who has to observe the hierarchy principles?

The addressees of the waste hierarchy are the Member States, which have to respect the waste hierarchy in their waste management policy and legislation.

Also directly concerned are regulators and authorities at regional and local level. The CJEU has repeatedly held that 'The obligation of a Member State to take all the measures necessary to achieve the result prescribed by a directive, whether general or particular, is binding on all the authorities of Member States including, for matters within their jurisdiction, the courts.'[48] This means that the waste hierarchy is to be observed and applied by all the relevant administrative levels within a given Member State that are concerned with waste policies and legislation.

In a number of provisions of WFD (e.g. Articles 8, 10, 15, 21, 22, 28), reference is made to the waste hierarchy emphasising its function as an overall principle, often together with other key principles of the WFD, namely the provisions on protecting human health and the environment set out in Article 13. When implementing these provisions, Member States' authorities should therefore also consider how to bring the waste hierarchy into effective application in this context.

In particular, Articles 28(1) and 29(1) WFD emphasise that waste management plans and waste prevention programmes must be established in accordance with the waste hierarchy.

Another important area where the waste hierarchy is referred to is the 'responsibility for waste management' (Article 15 WFD) which requires Member States to lay down in accordance with Article 4 responsibilities for producers and holders of waste and for other actors in the waste management area. National measures accordingly result in private sector actors such as the waste management industry being also obliged to respect the principles expressed in Article 4 WFD.

[48] Case C-129/96 Inter-Environnement Wallonie ASBL v Région wallonne (1997), para 40.

3.5 What is the relation between life-cycle thinking and life-cycle assessment?

The fundamental objective of life-cycling thinking (LCT) is to be aware of the overall environmental impact of the product or service. It aims to ensure that certain environmental impacts are not omitted when evaluating alternatives and to avoid simply shifting an environmental impact from one environmental medium to another. It thus makes decisions transparent, as well as based on sounder grounds and more efficient.

Under the conceptual framework defined by LCT, a number of quantitative decision-support methods exist, such as Life Cycle Assessment (LCA), Cost-Benefit Analysis (CBA), Life Cycle Costing (LCC), and Social LCA (S-LCA). These methods provide comprehensive, science-based support for decision-making and policy-making, in that environmental, social, and cost-related aspects can be simultaneously considered. However, it should be noted that when applying LCT there is no legal obligation under Article 4(2) WFD to use any of these available support methods.

For environmental aspects, LCT is supported in the most comprehensive manner by the use of the quantitative tool Life Cycle Assessment (LCA), as defined by the ISO 14040 and 140444. Among the existing above-mentioned LCT-based methods, Life Cycle Assessment (LCA) is the most widely used method of assessing and quantifying environmental aspects.

Further detailed guidance on applying LCT/LCA to waste management is given in the technical guidance documents published by the JRC.[49] As a starting point, the JRC Guidance on LCT/LCA for policy makers and business[50] provides a number of approaches to assessing life cycle impacts of products, such as Carbon Footprinting, Material Flow Analysis and Life Cycle Costing.

3.6 How can life-cycle methodology be applied to waste management decisions?

When LCT/LCA are applied to waste management services, the assessments typically focus on a comparison of various waste management options, rather than covering the entire life-cycle of the products which have become waste. For example, when evaluating different options for bio-waste management, the production stages of the food that has become bio-waste are not usually considered. Therefore, LCT/LCA applied to waste management services can differ from product LCT/LCA, which accounts for the entire life-cycle of a product, in which waste management may play only a minor role. However, if one of the waste management options evaluated includes returning materials to the life cycle of a product, the system boundaries of the study should be expanded to include the potential environmental impacts or benefits of such waste management services. For example, when looking at

[49] These guidance documents will be published soon as JRC scientific reports on the JRC website.

[50] European Commission, Making sustainable consumption and production a reality (2010), available at: http://lct.jrc.ec.europa.eu/pdf-directory/Making%20sustainable%20consumption%20and%20production%20a%20reality-A%20guide%20for%20business%20and%20policy%20 makers%20to%20Life%20Cycle%20Thinking%20and%20Assessment.pdf

municipal waste management including recycling, the benefits of saving virgin raw materials in the production stages of products have to be taken into account.

4 Separate Collection

4.1 What is understood by 'separate collection' in the WFD?

'Separate collection' is defined in Article 3(11) WFD as a collection where a waste stream is kept separate from waste of a different type or nature, so as to facilitate a specific treatment. Further information on the definition of separate collection can be found in Chapter 1.5.1.

4.2 What is the basic rationale behind separate collection?

The basic rationale behind the idea of separate collection is reflected in recital 28 WFD: 'In line with the objective of helping move the EU closer to a recycling society, and as a means to facilitating or improving its recovery potential, waste should be separately collected before undergoing recovery operations that deliver the best overall environmental outcome'. Additionally, the recital outlines that the separation of hazardous compounds from waste streams may contribute to achieving environmentally-sound management. Thus, separate collection aims at facilitating recovery, and specifically recycling, and enhancing the quality of recovered products, as well as identifying and eliminating hazardous compounds in mixed waste in order to reduce impacts.

Recital 28 WFD refers to 'source separation', calling for separation at the moment when waste is generated for the first time, rather than separating already mixed waste.

In line with these objectives, separate collection is sought in order to ultimately achieve treatment, and in particular the recovery and recycling of separated fractions of waste. In practice, this would require separate storage and transport of separately collected waste fractions as well as an observance of the ban on mixing waste (see Chapter 5 below).

4.3 What categories of separate collection does the WFD refer to and which actors are involved?

The WFD distinguishes between different categories of separate collection, each applying to different waste streams. The addressees of setting up of separate collection are the Member States. The following four categories, with different degrees of obligations, are recognised by the WFD:

- A general obligation to encourage separate collection so as to facilitate recovery;
- A general obligation to introduce separate collection so as to facilitate recycling;
- An obligation to introduce separate collection for paper, metal, plastic and glass so as to facilitate recycling of these waste streams;

- An obligation to introduce separate collection for waste oils and encourage separate bio-waste collection.

The obligations set out by the WFD are supplemented by requirements on separate collection in the following waste-stream related directives:

- Article 5 WEEE Directive 2002/96/EC;
- Article 7 Batteries Directive 2006/66/EC;
- Article 6(1) and (3) / Annex I End-of-Life Vehicles Directive 2000/53/EC; and
- Article 6(3) Directive 96/59/EC on PCB/PCT-containing waste.

4.3.1 General obligation to encourage separate collection so as to facilitate recovery

Article 10(2) WFD encourages Member States to make use of separate collection of waste to facilitate or improve recovery. This provision applies to all waste streams. A precondition is that the separate collection is 'technically, environmentally and economically practicable' (see Chapter 4.4 below).

Further, by referring to compliance with Member State's obligations under Article 10(1) WFD, Article 10(2) WFD makes it clear that the separate collection has to be a necessary measure to ensure that waste undergoes recovery operations in accordance with the principles set out in Articles 4 (waste hierarchy, see Chapter 3 above) and 13 (Protection of human health and the environment) WFD.

In cases where the abovementioned preconditions are met, Member States are obliged to introduce separate waste collection by 2015 for paper, metal, plastic and glass.

4.3.2 General obligation to introduce separate collection to facilitate recycling

In accordance with Article 11(1), paragraph 2 WFD, Member States are required to set up separate collection schemes as measures to promote high-quality recycling. Bearing in mind that recycling is a specific case of recovery (see Chapter 1.4.6 above), Article 11 is *lex specialis* in comparison with Article 10, meaning that in cases where separate collection is needed to facilitate waste recycling, Article 11 shall apply.

Article 11(1), paragraph 2 applies to all waste streams in a similar manner to Article 10(2) WFD and again a precondition is that the separate collection is 'technically, environmentally and economically practicable' (see Chapter 4.4 below). An additional condition is that the separate collection should be 'appropriate to meet the necessary quality standards for the

relevant recycling sectors‘. The ‘high-quality recycling’ as mentioned in Article 11 is orientated to the quality standards of the recycling industries.

Article 11(1), paragraph 2 WFD indicates that Member States ‘shall set up’ separate collection schemes whereby the preconditions are met.

4.3.3 Obligation to introduce separate collection for paper, metal, plastic and glass to facilitate recycling of these waste streams

Article 11(1), paragraph 3 WFD contains a direct obligation (‘shall be set up‘) for Member States to introduce ‘at least’ separate collection for the four explicitly-listed waste streams — paper, metal, plastic and glass — by 2015. However, the provision contains a reference to Article 10(2) WFD, and by this to the condition that the separate collection of these waste streams is ‘technically, environmentally and economically practicable’ (see Chapter 4.4 below). The viability of separate collection of the dry fractions from household waste has been demonstrated by the longstanding practice and experience in many Member States. Therefore, separate collection of these waste streams should in principle also be introduced in the remaining Member States, provided the abovementioned preconditions are met.

4.3.4 Possibility of co-mingling

The WFD does not include an explicit statement covering the co-mingled collection of different recyclable waste streams (as one co-mingled stream).

As a starting point, it should be borne in mind that in accordance with Article 11(1), paragraph 3 WFD, and subject to the conditions set out in this provision, there is an obligation to have in place by 2015 separate collection for paper, metal, plastic and glass. Separate collection is defined as waste-stream-specific separate collection (see above).

On the other hand, setting up a separate collection is also subject to the principle of proportionality (subject to Article 10(2) WFD: necessity and technical, environmental and economic practicability). Considering that the aim of separate collection is high-quality recycling, the introduction of a separate collection system is not necessary if the aim of high-quality recycling can be achieved just as well with a form of co-mingled collection.

So, co-mingled collection of more than one single waste streams may be accepted as meeting the requirement for separate collection, but the benchmark of ‘high-quality recycling’ of separately collected single waste streams has to be examined; if subsequent separation can achieve high-quality recycling similar to that achieved with separate collection, then co-mingling would be in line with Article 11 WFD and the principles of the waste hierarchy. Practically, this usually excludes co-mingled collection of bio-waste and other ‘wet‘waste fractions with dry fractions such as e.g. paper. On the other hand, subject to available separation technology, the co-mingled collection of certain dry recyclables (e.g. metal and

plastic) should be possible, if these materials are being separated to high quality standards in a subsequent treatment process.

4.3.5 Obligation to introduce separate collection for waste oils and bio-waste

Article 21(1)(a) WFD requires Member States to ensure that waste oils are collected separately where this is technically feasible. This is a different and stricter concept than the wording 'technically, environmentally and economically practicable' as used in Articles 10 and 11. Consequently, Member States may allow exemptions only where separate collection is not feasible for technical reasons. Recital 44 WFD explains that the main grounds for the separate collection of waste oils is its importance for the proper management of waste oils and the prevention of damage to the environment stemming from improper disposal of waste oils.

An additional separate collection requirement for waste oils of different characteristics is included in Article 21(1)(c) WFD. The idea of this provision is that mixing together waste oils of different characteristics hampers the recycling of waste oils.

Article 22 WFD asks Member States to 'take measures, as appropriate, to encourage' the separate collection of bio-waste, with a view to the composting and digestion of bio-waste. Recital 35 WFD further explains the importance of facilitating separate collection of bio-waste, including the reduction of greenhouse gas emissions. An example would be methane, a landfill gas around 25 times more potent than CO_2, from waste disposal in landfills.[51] Compared with Article 21 WFD which asks Member States to 'ensure' separate collection and makes technical feasibility the only condition, the wording of Article 22 WFD leaves the introduction of separate bio-waste collection to Member States' discretion but obliges Member States — 'shall take measures' — to concretely *encourage* separate collection.

In its Communication of 18 May 2010 on future steps in bio-waste management in Europe[52], the Commission comes to the conclusion that composting and anaerobic digestion offer the most promising environmental and economic results for bio-waste that cannot be prevented. An important pre-condition is a good-quality input to these processes. In practice, today this would be best achieved by separate collection. In its Communication, the Commission therefore recommends that Member States make the fullest possible use of the options provided by Articles 11 and 22 of the WFD to introduce separate collection systems as a matter of priority in line with the competition rules of the Treaty on the Functioning of the European Union.

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[51] According to Article 5(2)(c) of Landfill Directive 99/31/EC, by 16 July 2016 at the latest the amount of biodegradable municipal waste going to landfills must be reduced to 35% of the total amount (by weight) of biodegradable municipal waste produced in 1995 or the latest year before 1995 for which standardised Eurostat data is available.

[52] Available at http://ec.europa.eu/environment/waste/compost/pdf/com_biowaste.pdf.

4.4 What does 'technically, environmentally and economically practicable' mean as used in Articles 10 and 11 WFD?

The combination of terms 'technically, environmentally and economically practicable' describes the preconditions for Member States being, to varying extents, obliged to set up separate collection under Articles 10 and 11 WFD. The wording has been introduced into the WFD without any preceding examples in EU waste management legislation.

'Technically practicable' means that the separate collection may be implemented through a system which has been technically developed and proven to function in practice. 'Environmentally practicable' should be understood such that the added value of ecological benefits justify possible negative environmental effects of the separate collection (e. g. additional emissions from transport). 'Economically practicable' refers to a separate collection which does not cause excessive costs in comparison with the treatment of a non-separated waste stream, considering the added value of recovery and recycling and the principle of proportionality.

5 Mixing ban for hazardous waste

Article 18(1) of the WFD obliges Member States to ensure that hazardous waste is not mixed.

5.1 Subject and background; general approach of WFD to mixing of waste

The mixing of waste is common practice in the EU and is recognised as a treatment operation by Annex I and II to the WFD (see footnotes to operations D13 / R12). In many fields of waste management, mixing of waste is everyday practice.

However, EU legislation recognises that individual waste streams should in principle be kept separate from other wastes and not mixed for the following reasons:

- to ensure proper waste management (re-use and recovery of homogenous streams are generally easier than for mixed streams);

- to make management of wastes (and especially recycling and recovery operations) simpler, given that characteristics of single waste streams can be easier to predict and to control than properties of mixed waste;

- to avoid the contamination of waste streams which are suitable for recycling and to avoid the inclusion of hazardous substances in products which are generated from recycled materials; and

- to prevent the mixing of waste with the intention of reducing contamination levels and hazardous characteristics in order to meet limit values (see for example Article 5(4) Landfill Directive 99/31/EC) or to by-pass legal requirements (see for example mixing ban laid down in Article 19 of Waste Shipment Regulation (EC) No 1013/2006).

Regarding the preferences for homogenous waste streams, restrictions on mixing are closely linked to the principle of separate collection, as is clearly shown in Article 10(2) WFD which applies to all waste streams: 'Where necessary to ensure and facilitate waste recovery, waste shall be collected separately if technically, environmentally and economically practicable and shall not be mixed with other waste or other material with different properties.'(see for details Chapter 4 above).

Particularly as regards hazardous wastes, the impact of mixing is of concern as different hazardous wastes may be likely to react chemically with one another and aggravate hazardous effects; moreover, additional hazardous substances may be produced, or hazardous substances in wastes might be diluted and distributed in the environment instead of being removed and destroyed by appropriate treatment of hazardous waste.

Thus, measures restricting the mixing of hazardous waste are measures ensuring the safety of waste management and the removal of hazardous substances from wastes, both on general grounds to protect human health and the environment, in line with the general principles of Article 13 WFD, but also for reasons of occupational health and safety. Considering these aspects, the ban in principle on mixing hazardous waste is an expression of the precautionary principle and the principle of preventive action.

The previous Hazardous Waste Directive 91/689/EEC (repealed by the WFD) had already recognised as a principle a ban on mixing hazardous waste and provided for derogations from it. However, the wording of that provision lacked clear, enforceable criteria. As already pointed out by the Commission's proposal for a new WFD, one main aim of the new WFD is to make the mixing ban more effective and to clarify the conditions under which mixing of hazardous waste may be acceptable.

The mixing ban applies all along the waste chain, from the waste producer to all involved in carrying out waste treatment. Also, the mixing ban applies to all hazardous wastes in the sense of Article 3(2) WFD, except to hazardous wastes produced by households (Article 20). Additional specific rules for the mixing of waste oils are laid down in Article 21(1)(c) WFD.

The structure of Article 18 WFD makes it clear that as a principle the mixing of hazardous waste is banned. Derogations to this ban are however possible under strict and cumulative conditions which are detailed in Article 18(2) WFD.

5.2 How is the key term 'mixing' to be understood, and what is the relation to the WFD terms 'blending' and 'dilution'?

The term 'mixing' is not defined in the WFD, nor are the terms 'blending' (used in the description of the treatment operation in Annexes I and II) and 'dilution' (Article 18(1) WFD).

The BREF document on waste treatment industries[53] uses the term '*blending*' more for mixing liquids than for solids, unless mixing a solid into a liquid.

Dilution could be understood as including mixing with the aim of lowering concentration levels of hazardous agents present in the waste.

However, these definitions are not legally binding, and in no event are they to be understood as introducing separate 'mixing' categories.

Indeed, the ban on the mixing of hazardous waste in Article 18(1) WFD and the requirements for derogation in Article 18(2) WFD apply irrespective of the aggregation state

[53] http://www.google.com/search?hl=en&q=BREF+document+on+waste+treatment+industries.

of the waste in question and the reasons — if any — for the person or institution to undertake the mixing of waste. On the basis of this understanding, 'blending' and 'dilution' would be sub-categories of mixing for which no specific provisions are foreseen and which are mainly introduced for clarification purposes.

5.3 What cases of mixing of hazardous waste are covered by the mixing ban?

The mixing ban of Article 18(1) WFD applies to three cases: the mixing of hazardous waste with:

- other categories of hazardous waste;
- non-hazardous waste; and
- substances or materials.

The approach of the WFD is an exhaustive ban on the mixing of hazardous waste, in line with the precautionary principle. It covers any mixing (see the exhaustive meaning of this term in Chapter 5.2 above) of hazardous wastes with non-hazardous wastes (i.e. wastes not exhibiting any of the properties of Annex III to the WFD) and any mixing of hazardous waste with any non-waste substances or materials, irrespective of the circumstances, the technique used or the intention of the waste holder. Derogations to the mixing-ban principles could be allowed pursuant to Article 18(2) WFD under strict and cumulative conditions. This should be applied for example to hazardous waste treatment operations which include mixing steps in the operational process.

In contrast to the two scenarios mentioned above, the mixing of hazardous waste with other hazardous waste is only banned if the two wastes are in different categories (see for the interpretation of this term Chapter 5.4 below).

Examples of treatment to which the mixing ban applies and which are only allowed subject to the conditions of Article 18(2)(a) to (c) WFD (see Chapter 5.5 below) are:

- Mixing of hazardous waste with non-hazardous waste prior to treatment (e.g. incineration) so as to give it the necessary technical properties for the planned operation;
- Mixing contaminated soil with uncontaminated soil in order to re-use it.

5.4 How is the term ‘different categories of hazardous waste’ in Article 18(1) to be understood?

The mixing of hazardous waste with other hazardous waste is banned only if the two wastes do not belong to the same category.

The term ‘categories of waste’ is referred to in the WFD without being used in a uniform way. In Article 2(4), reference is made to certain waste streams; in Article 11(2)(b), it seems that ‘category of waste’ refers to an entry in the EU List of Waste Decision 2000/532/EC (LOW). Nor do other current pieces of EU waste legislation provide a clear concept of what is meant.

The reference had previously been included in Directive 91/689/EEC, referring to the then-Annex I to that Directive, but Annex I of Directive 91/689/EEC was not taken over into the new WFD. However, the underlying rationale of Annex I of Directive 91/689/EEC may still serve as a guiding principle when assessing whether hazardous wastes are of different categories. The intention of Annex I of Directive 91/689/EEC was to describe and categorise wastes according to their nature or the activity which generated them.

Consequently, categories of hazardous wastes in the sense of Article 18(1) WFD should be read as hazardous wastes of similar nature irrespective of their origin.

Further, in line with the aim pursued by the mixing ban and the underlying precautionary principle, any interpretation of ‘different categories of hazardous waste’ should not be understood too widely. Bearing in mind that Article 18(1) refers to the concept of ‘hazardous‘ waste defined in Article 3(2) of WFD, taken in conjunction with Annex III to the WFD and the (*)-entries of LOW, it is proposed that waste be regarded as belonging to different categories if:

- two hazardous wastes exhibit different properties in terms of Annex III to the WFD; or

- they are classified under different (*)-entries in the LOW.

This approach must be applied with an eye to whether the result actually is in line with the general attitude of the WFD towards the mixing of hazardous waste. For example, one should bear in mind that the LOW is source-generated and might not always deliver appropriate results with respect to the principles of Article 13 and the safety of waste treatment. In a number of cases, individual LOW entries are very wide, covering a variety of waste types which should certainly not be mixed even if the properties which render them hazardous are identical from a health and environmental point of view (e.g. entry 17 05 03* — soils and stones containing dangerous substances — may apply to different soils contaminated with different pollutants).

In all cases where this approach does not always lead to appropriate results, bearing in mind the rationale of the mixing ban, the approach can be supplemented/modified by considering the rationale of Article 18(1) WFD, as outlined above.

5.5 What are the conditions under which mixing of hazardous waste subject to the ban of Article 18(1) WFD may be allowed?

Article 18(2)(a) to (c) WFD stipulates the requirements under which Member States may allow mixing. The three preconditions are as follows:

- the mixing operation is carried out by an establishment or undertaking which has obtained a permit in accordance with Article 23;

- the provisions of Article 13 are complied with and the adverse impact of the waste management on human health and the environment is not increased; and

- the mixing operation makes use of the best available techniques.

All three requirements must be fulfilled.

5.6 What are the consequences of the requirement under Article 18(2)(a) that mixing operations may be carried out only by establishments/undertakings which have obtained a permit as described in Article 23 WFD?

From Article 18(2)(a) WFD, it can be deduced that mixing is allowed only when it is deliberate and undertaken to achieve a particular result which in turn complies with permit requirements and BAT requirements. From this requirement, it can be concluded that:

- mixing is not allowed as a non-intentional or accidental action; any treatment operation must be undertaken in a way that ensures that only intentional, non-accidental mixing operations are conducted;

- there can be no exemption from permit requirements (Article 24 WFD);

- mixing during collection and transport is allowed only if collectors and carriers have obtained a permit to do so (a registration in the sense of Article 26 WFD is not sufficient).

According to Article 23(1)(b) WFD, each type of operation (including mixing operations, see wording of Article 18(2) WFD) has to be mentioned in the permit. Consequently, the permit should state which mixing operation is allowed. Bearing in mind the traceability

principle, the permit may include information such as a description of the waste inputs mixed and the waste output generated.

For the newly-generated mixed waste, control measures, including traceability as under Article 17 WFD, do fully apply.

5.7 What criteria are addressed in Article 18(2)(b) WFD when stipulating that 'the provisions of Article 13 are complied with and the adverse impact of the waste management on human health and the environment is not increased'?

Article 18(2)(b) WFD sets criteria which reflect minimum standards for the impacts of mixing operations with respect to human health and the environment in general, as well as the protected objects including water, air, soil, plants, animals, etc. listed in Article 13 WFD.

For example, diluting hazardous substances in recycled products (for example diluting pesticides in recycled plastics products) would increase adverse environmental impacts.

Referring to 'waste management' (see definition in Article 3(9) WFD) rather than only to the mixing operation makes it possible to also address possible impacts of the mixing beyond the operation and the facility. By including the general principle of Article 13 WFD and additionally requiring that adverse impacts are not increased, it may become necessary under Article 18(2)(b) WFD to assess all possible adverse environmental and health impacts from the perspective of the precautionary principle.

The impact of Article 13 WFD is not always obvious due to its general nature. As a starting point, it should be kept in mind that the content of Article 13 WFD is almost identical to that of Article 4 of Directive 2006/12/EC; case law which interpreted Article 4 may still be consulted as a guide to future decisions. In the specific case of the mixing of hazardous waste, it can be deduced that – as a minimum and without prejudice to further concrete decisions — mixing of waste must not be allowed if the main characteristics of the wastes to be mixed, the impacts of the chemical reaction or the main characteristics of the output of the mixing operation are not exactly known.

The waste management must not increase the adverse impact on human health and the environment. Evidence of an increase in this impact may for example be if the total volume of, or the danger posed by, the waste generated is greater than that of the input waste/material.

5.8 How to assess BAT for mixing waste as addressed in Article 18(2)(c) WFD?

BAT is defined in Article 3(20) WFD with a reference to the IPPC Directive[54] which suggests that BAT is defined within the BREFs drawn up in the Sevilla process by the Commission's Joint Research Centre in Sevilla in implementing the provisions of the IPPC Directive. In the absence of clear guidance in these documents, BAT has to be assessed considering the state of the art of waste technology.

5.8.1 BREF waste treatment industry

Useful — although very general — remarks on the mixing of waste can be found in the BREF on waste treatment industries.[55]

The following quotes are from the BAT document section on techniques to consider in the determination of BAT:

'Mixing must be prevented from leading to any of the wastes to be mixed being treated or processed to a lower quality level than is desirable'.

The BAT document also requires that mixing and blending be permitted under waste legislation.

In relation to mixing or blending, BAT for waste treatment is the following:

'To have and apply mixing/blending rules oriented to restrict the types of wastes that can be mixed/blended together in order to avoid increasing pollution emission of down-stream waste treatments. These rules need to consider the type of waste (e.g. hazardous, non-hazardous), waste treatment to be applied as well as the following steps that will be carried out to the waste output'.

5.8.2 BREF waste incineration

The BREF document for incineration considers whether or not mixing is allowed and under what conditions it should be carried out. The following quotes are from the BREF document section on techniques to consider when determining BAT:

- 'Techniques used for waste pre-treatment and mixing are wide-ranging and may include: mixing of liquid hazardous wastes to meet input requirements for the installation' (section 4.1.5.1);

[54] IPPC Directive 2008/1/EC is repealed with effect from 7 January 2014 by the new IE Directive 2010/75/EU. References to IPPC Directive will be construed as references to the IE Directive in accordance with Article 81(3), Annex X to the IE Directive.

[55] Ibid. footnote 54, page 87.

- 'The pre-treatment of liquid packaged waste and packed or bulk solid waste to produce a mixture for continuous feed to the furnace can be carried out'. (section 4.1.5.3).

In relation to mixing, BAT for waste incineration is the following:

'8. The segregation of the storage of wastes according to a risk assessment of their chemical and physical characteristics to allow safe storage and processing, as described in 4.1.4.5';

'11. The mixing (e.g. using bunker-crane mixing) or further pre-treatment (e.g. the blending of some liquid and pasty wastes, or the shredding of some solid wastes) of heterogeneous wastes to the degree required to meet the design specifications of the receiving installation (4.1.5.1). When considering the degree of use of mixing/pre-treatment it is of particular importance to consider the cross-media effects (e.g. energy consumption, noise, odour or other releases) of the more extensive pre-treatments (e.g. shredding). Pre-treatment is most likely to be a requirement where the installation has been designed for a narrow specification, homogeneous waste';

'The use of a suitable combination of the techniques and principles described in 4.6.1 for improving waste burnout to the extent that is required so as to achieve a TOC value in the ash residues of below 3 wt % and typically between 1 and 2 wt %, including in particular:
[…]
c. the use of techniques for mixing and pre-treatment of the waste, as described in BAT 11, according to the type(s) of waste received at the installation.'

In relation to mixing, BAT for hazardous waste incineration is the following:

'the mixing, blending and pre-treating of the waste in order to improve its homogeneity, combustion characteristics and burn-out to a suitable degree with due regard to safety considerations. Examples are the shredding of drummed and packaged hazardous wastes, described in 4.1.5.3 and 4.1.5.6.

6 Annex 1: Legal acts cited in the document

6 Annex 1: Legal acts cited in the document

Repealed legal acts are marked with an asterisk (*)

Citation	Full reference	Link
WFD	**Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (OJ L 312, 22.11.2008, p. 3).**	**http://eur-lex.europa.eu/Notice.do?val=483340:cs&lang=en&list=522727:cs,495628:cs,483340:cs,464230:cs,464043:cs,&pos=3&page=1&nbl=5&pgs=10&hwords=**
EOW Regulation on certain scrap metals	**Council Regulation (EU) No 333/2011 of 31 March 2011 establishing criteria determining when certain types of scrap metal cease to be waste under Directive 2008/98/EC of the European Parliament and of the Council (OJ OJ L 94, 8.4.2011, p. 2).**	**http://eur-lex.europa.eu/Result.do?T1=V1&T2=2011&T3=333&RechType=RECH_naturel&Submit=Suche**
Previous WFD*	**Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on waste (OJ L 114, 27.4.2006, p. 9).***	**http://eur-lex.europa.eu/Notice.do?val=425607:cs&lang=en&list=437407:cs,425607:cs,420249:cs,419984:cs,&pos=2&page=1&nbl=4&pgs=10&hwords=**
List of waste / LOW	**2000/532/EC: Commission Decision of 3 May 2000 replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste (notified under document number C(2000) 1147)**	**http://eur-lex.europa.eu/Notice.do?val=236655:cs&lang=en&list=236655:cs,237750:cs,&pos=1&page=1&nbl=2&pgs=10&hwords=**

	(OJ L 226, 6.9.2000, p. 3).	
Hazardous Waste Directive*	**Council Directive 91/689/EEC of 12 December 1991 on hazardous waste (OJ L 377, 31.12.1991, p. 20.***	**http://eur-lex.europa.eu/Notice.do?val=172978:cs&lang=en&list=225578:cs,172978:cs,&pos=2&page=1&nbl=2&pgs=10&hwords=**
Waste Shipment Regulation	**Regulation (EC) No 1013/2006 of the European Parliament and of the Council of 14 June 2006 on shipments of waste (OJ L 190, 12.7.2006, p. 1).**	**http://eur-lex.europa.eu/Notice.do?val=519357:cs&lang=en&list=519357:cs,507018:cs,&pos=1&page=1&nbl=2&pgs=10&hwords=**
Landfill Directive	**Council Directive 1999/31 of 26 April 1999 on the landfill of waste (OJ L 182, 16.7.1999, p. 1), , last amended by Regulation (EC) No 1137/2008 of the European Parliament and of the Council of 22 October 2008 (OJ L 311, 21.11.2008, p. 1).**	**http://eur-lex.europa.eu/Notice.do?val=487115:cs&lang=en&list=487115:cs,234135:cs,&pos=1&page=1&nbl=2&pgs=10&hwords=**
Waste incineration Directive	**Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the incineration of waste (OJ L 332, 28.12.2000, p. 91.**	**http://eur-lex.europa.eu/Notice.do?val=172978:cs&lang=en&list=225578:cs,172978:cs,&pos=2&page=1&nbl=2&pgs=10&hwords=**
WEEE Directive	**Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE) (OJ L 37, 13.2.2003, p. 24), last amended by Directive 2008/112/EC of the European Parliament and of the Council of 16 December 2008 (OJ L 345, 23.12.2008, p. 68).**	**http://eur-lex.europa.eu/Notice.do?val=283952:cs&lang=en&list=481621:cs,454034:cs,283952:cs,272350:cs,&pos=3&page=1&nbl=4&pgs=10&hwords=**

REACH Regulation	**Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (OJ L 396, 30.12.2006, p. 1).**	**http://eur-lex.europa.eu/Notice.do?val=444402:cs&lang=en&list=516890:cs,516899:cs,515837:cs,488164:cs,471644:cs,449533:cs,444402:cs,&pos=7&page=1&nbl=7&pgs=10&hwords=**
CLP Regulation	**Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (OJ L 353, 31.12.2008, p. 1).**	**http://eur-lex.europa.eu/Notice.do?val=486098:cs&lang=en&list=555563:cs,555564:cs,555566:cs,555559:cs,555561:cs,490877:cs,486098:cs,&pos=7&page=1&nbl=7&pgs=10&hwords=**
PCB / PCT Waste Directive	**Council Directive 96/59/EC of 16 September 1996 on the disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT) (OJ L 243, 24.9.1996, p. 31).**	**http://eur-lex.europa.eu/Notice.do?val=344406:cs&lang=en&list=344406:cs,343775:cs,344527:cs,&pos=1&page=1&nbl=3&pgs=10&hwords=**
Packaging Directive	**European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste (OJ L 365, 31.12.1994, p. 10).**	**http://eur-lex.europa.eu/Notice.do?val=302037:cs&lang=en&list=302037:cs,&pos=1&page=1&nbl=1&pgs=10&hwords=**

ELV Directive	**Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of life vehicles (OJ L 269, 21.10.2000, p. 34).**	**http://eur-lex.europa.eu/Notice.do?val=236993:cs&lang=en&list=236993:cs,240084:cs,237275:cs,&pos=1&page=1&nbl=3&pgs=10&hwords=**
Batteries Directive	**Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC (OJ L 266, 26.9.2006, p. 1).**	**http://eur-lex.europa.eu/Notice.do?val=433535:cs&lang=en&list=449551:cs,449550:cs,436788:cs,435685:cs,433535:cs,421715:cs,420364:cs,&pos=5&page=1&nbl=7&pgs=10&hwords=**
Mining Waste Directive	**Directive 2006/21/EC of the European Parliament and of the Council of 15 March 2006 on the management of waste from extractive industries and amending Directive 2004/35/EC — Statement by the European Parliament, the Council and the Commission (OJ L 102, 11.4.2006, p. 15).**	**http://eur-lex.europa.eu/Notice.do?val=424935:cs&lang=en&list=467047:cs,443494:cs,442465:cs,424935:cs,420087:cs,&pos=4&page=1&nbl=5&pgs=10&hwords=**
POPs Regulation	**Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC (OJ L 158, 30.4.2004, p. 7).**	**http://eur-lex.europa.eu/Notice.do?val=387315:cs&lang=en&list=453621:cs,392465:cs,387316:cs,387315:cs,&pos=4&page=1&nbl=4&pgs=10&hwords=**
ABP Regulation	**Regulation (EC) No 1069/2009 of the European Parliament and of the Council of 21 October 2009 laying down health rules as regards animal by-products and derived products not intended for human consumption and repealing Regulation (EC) No 1774/2002 (Animal by-products Regulation) (OJ L 300, 14.11.2009, p. 1).**	**http://eur-lex.europa.eu/Notice.do?val=503920:cs&lang=en&list=503920:cs,&pos=1&page=1&nbl=1&pgs=10&hwords=**

Previous ABP Regulation*	**Regulation (EC) No 1774/2002 of the European Parliament and of the Council of 3 October 2002 laying down health rules concerning animal by-products not intended for human consumption (OJ L 273, 10.10.2002, p. 1), to be repealed with effect from 4 March 2011 by Reuglation (EC) No 1069/2009 of the European Parliament and of the Council of of 21 October 2009.**	**http://eur-lex.europa.eu/Notice.do?val=275247:cs&lang=en&list=466113:cs,442717:cs,275247:cs,501924:cs,&pos=3&page=1&nbl=4&pgs=10&hwords=** **http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:300:0001:0033:EN:PDF**
Urban waste water Directive	**Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment (OJ L 135, 30.5.1991, p. 40).**	**http://eur-lex.europa.eu/Notice.do?val=172885:cs&lang=en&list=172885:cs,&pos=1&page=1&nbl=1&pgs=10&hwords=**
IPPC Directive	**Directive 2008/1/EC of the European Parliament and of the Council of 15 January 2008 concerning integrated pollution prevention and control (Codified version) (OJ L 24, 29.1.2008, p. 8).**	**http://eur-lex.europa.eu/Notice.do?val=463847:cs&lang=en&list=463847:cs,462522:cs,462428:cs,&pos=1&page=1&nbl=3&pgs=10&hwords=**
IED Directive	**Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control) (OJ L 334, 17.12.2010, p. 17)**	**http://eur-lex.europa.eu/Result.do?T1=V1&T2=2010&T3=75&RechType=RECH_naturel&Submit=Search**
Water Framework Directive	**Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (OJ L 327, 22.12.2000, p. 1).**	**http://eur-lex.europa.eu/Notice.do?val=237000:cs&lang=en&list=465959:cs,425605:cs,258162:cs,237000:cs,236223:cs,237282:cs,&pos=4&page=1&nbl=6&pgs=10&hwords=**
Environmental liability Directive	**Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of**	**http://eur-lex.europa.eu/Notice.do?val=343623:cs&lang=en&list=343623:cs,342305:cs,&pos=1&page=1&nbl=2&pgs=10&hwords=**

	environmental damage (OJ L 143, 30.4.2004, p. 56).	
Technical Standards and Regulations Directive 98/34/EC	**Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations (OJ L 204, 21.7.1998, p. 37).**	**http://eur-lex.europa.eu/Notice.do?val=226506:cs&lang=en&list=226506:cs,225780:cs,226789:cs,&pos=1&page=1&nbl=3&pgs=10&hwords=**
Construction Product Directive 89/106/EEC	**Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products.**	**http://eur-lex.europa.eu/Notice.do?val=149656:cs&lang=en&list=149656:cs,&pos=1&page=1&nbl=1&pgs=10&hwords=**

7 Annex 2: CJEU case law cited in the document

Case	Date	Parties	Link
Joined cases C-206/88 and C-207/88	**28.03.90**	**Criminal proceedings against G. Vessoso and G. Zanetti (Vessoso and Zanetti).**	**http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:61988J0206:EN:HTML**
Joined cases C-304/94, C-330/94, C-342/94 and C-224/95	**25.06.97**	**Criminal proceedings against Euro Tombesi and Adino Tombesi (C-304/94), Roberto Santella (C-330/94), Giovanni Muzi and others (C-342/94) and Anselmo Savini (C-224/95) (Tombesi et al).**	**http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:61994J0304:EN:HTML**
Joined cases C-418/97 and C-419/97	**15.06.00**	**ARCO Chemie Nederland Ltd v Minister van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer et al (ARCO).**	**http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:61997J0418:EN:HTML**
C-6/00	**27.02.02**	**Abfall Service AG (ASA) v Bundesminister für Umwelt, Jugend und Familie (ASA).**	**http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62000J0006:EN:HTML**
C-9/00	**18.04.02**	**Palin Granit Oy and Vehmassalon kansanterveystyön kuntayhtymän hallitus (Palin Granit Oy).**	**http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62000J0009:EN:HTML**
C-228/00	**26.09.02**	**Commission of the European Communities□v□Federal Republic of Germany (Belgian Cement kilns).**	**http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62000J0228:EN:HTML**
C-116/01	**03.04.03**	**SITA EcoService Nederland BV, formerly Verol Recycling Limburg BV□v□Minister van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer**	**http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62001J0116:EN:HTML**

		(SITA).	
Case C-444/00	**19.06.03**	**The Queen on the application of Mayer Parry Recycling Ltd v Environment Agency and Secretary of State for the Environment, Transport and the Regions (Mayer Parry).**	**http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62000J0444:EN:HTML**
Case C-114/01	**11.09.03**	**Proceedings against AvestaPolarit Chrome Oy, formerly Outokumpu Chrome Oy (Avesta Polarit).**	**http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62001J0114:EN:HTML**
C.-235/02	**15.01.04**	**Criminal proceedings against Marco Antonio Saetti and Andrea Frediani Saetti and Frediani (Saetti).**	**http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62002O0235:EN:HTML**
C-457/02	**11.11.04**	**Niselli.**	**http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62002J0457:EN:HTML**
C-1/03	**07.09.04**	**Paul Van de Walle and Others v Texaco Belgium SA (van de Walle).**	**http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62003J0001:EN:HTML**
C-270/03	**09.06.05**	**Commission of the European Communities v Italian Republic.**	**http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62003CJ0270:EN:HTML**
C-121/03	**08.09.05**	**Commission of the European Communities v Kingdom of Spain (Manure Case).**	**http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62003J0121:EN:HTML**
C-252/05	**10.05.07**	**Thames Water Utilities Ltd v South East London Division, Bromley Magistrates' Court**	**http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62**

		(Thames Water).	**005J0252:EN:HTML**
C-188/07	**24.06.08**	**Commune de Mesquer v Total France SA (Commune de Mesquer).**	**http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:62007J0188:EN:HTML**