

Diverting non-hazardous liquid wastes from landfill

Overview

From 30 October 2007 you cannot send liquid waste to landfills. This is a requirement under the Landfill Directive that aims to reduce our reliance on landfill as a waste management option. The Directive also aims to minimise the environmental impact of landfill sites. To meet this aim it is important that waste producers find better ways to manage their waste. If you are a waste producer now is a good time for you to review how you manage your waste and decide whether you need to keep using landfill at all.

What the Environment Agency expects from industry

We want waste producers to take responsibility for their waste, to try to reduce waste wherever possible, and make simple improvements in waste management that will help better protect the environment. Many liquid wastes are already treated in other ways for example, through the sewerage system with the agreement of the sewerage undertaker or through a waste or waste water treatment plant. You will need to use alternative options like these to treat liquids that would have previously been sent to landfill.

If you're a waste producer, you should now ask yourself:

- do I need to produce the waste at all;
- if I can't eliminate the waste stream, then what is the best way to deal with it, thinking about both the liquid and any solid content;
- who can best treat the liquid – should I treat it myself, or have it treated by a third party, such as a waste contractor or utility company?

Landfill operators should be talking to their customers now to make it clear they will not be able to accept liquid waste from 30 October 2007.

What you can expect from the Environment Agency

We will take a fair and balanced approach to introducing this new rule, focusing on achieving better results for the environment. We will concentrate on advising waste producers on the new rules, being clear that this is an opportunity to improve their overall environmental performance. For the waste management industry our focus will be on improving management systems and waste acceptance procedures across the sector. However, we will take action against landfill operators and waste producers who deliberately flout these new rules.

Status of this guidance

The Landfill Regulation Group has helped us develop this guidance. The Group represents waste producers and waste management companies. This guidance aims to publicise the new rules and help waste producers and managers to meet them.

- **Part A** of this document sets out the legal framework of the rules as well as people's responsibilities. It also answers common questions about the new rules.
- **Part B** of this document will help you identify alternative ways of dealing with liquid waste. In some cases waste producers will need specialist advice and you should discuss this with your waste contractor.

This guidance supplements our existing *Guidance on Waste Destined for Disposal in Landfills*. This is also available on our website¹ and is referred to here as 'WDFDL' (**W**aste **D**estined **F**or **D**isposal in **L**andfills).

The Landfill Regulation Group will review this document in the light of the practical experience gained as the new requirement takes effect. This review will also look at waste management practices within certain industry sectors and identify opportunities to improve environmental performance.

Part A: What the law says and what you have to do

Introduction

This part of the guidance explains the new rules and summarises what waste producers and waste management companies have to do. It also answers the most common questions on how the rules apply to non-hazardous liquid waste.

What is the new requirement?

From 30 October 2007, non-hazardous and inert landfills will not be allowed to accept liquid waste. Hazardous liquids are already banned from landfill.

Who is affected?

Landfill operators must make sure they do not accept liquid waste.

Also, producers of liquid waste who currently landfill that waste will have to make alternative arrangements.

What is the legislation behind this?

The new rules are a result of a Europe-wide requirement in the Landfill Directive.

Under the directive, liquid wastes were banned from landfills for hazardous waste from July 2002. Following a consultation in September 2004, the Government announced that there would be a complete ban on landfilling liquid wastes from 30 October 2007 in England and Wales.

¹http://www.environment-agency.gov.uk/commondata/acrobat/wacv2_1006008.pdf

Why is this happening?

European legislation is driving a more sustainable approach to waste management across Europe. The Landfill Directive aims to reduce our reliance on landfill and ensure that any future landfilling has less impact on our health and the environment.² The obligation to stop landfilling liquid waste is one of the ways we'll achieve this goal.

Interpretation

The regulatory requirement

The key requirement of the directive³ is:

Article 5(3) - Member states shall take measures in order that the following wastes are not accepted in a landfill:

(a) Liquid waste; it's important to understand what is meant by, 'liquid waste' and 'landfill' as well as the meaning of 'accept'.

Liquid waste

WDFDL provides guidance on what is considered liquid waste under the Landfill Directive. Liquid waste is:

- any waste that immediately flows into a space made in the surface of the waste; **or**
- any waste load containing more than 250 litres of free draining liquid substance or 10% of the load volume, whichever is the lesser amount. 'Free draining' means a liquid as defined in (i), whether or not that liquid is in a container.

Landfill

The directive⁴ defines a landfill as:

Article 2(g) - A waste disposal site for the deposit of waste onto or into land...

Recovery on Land

This means that deposits which are for the purposes of recovery rather than disposal are not subject to the directive, or to the ban. These deposits are regulated separately.⁵ We have published guidance on the recovery of solid⁶ and liquid wastes to land.⁷

²Article 1 of the Directive sets out its aims as:

With a view to meeting the requirements of Directive 75/442/EEC [The Waste Framework Directive], and in particular Articles 3 [encourage the prevention, recycling and processing of waste] and 4 [ensure that waste is disposed of without endangering human health and without harming the environment] thereof, the aim of this Directive is, by way of stringent operational and technical requirements on the waste and landfills, to provide for measures, procedures and guidance to prevent or reduce as far as possible negative effects on the environment, in particular the pollution of surface water, groundwater, soil and air, and on the global environment, including the greenhouse effect, as well as any resulting risk to human health from landfilling waste, during the whole life-cycle of the landfill.

³Council Directive 1999/31/EC on the landfill of waste.

⁴Council Directive 1999/31/EC on the landfill of waste.

⁵The Waste Management Licensing Regulations 1994.

⁶Guidance on the deposit of waste in land as a recovery activity, Environment Agency, July 2005.

⁷Guidance for the technical assessment of waste to land recovery activities, Environment Agency, July 2006

Lagoons

Sites where waste is stored for less than a year before disposal or less than three years before treatment or recovery are not landfills. A settling lagoon that stores waste would be defined as a landfill, unless the wastes are removed within the correct timeframe. If the operator of the lagoon cannot meet these time scales, then the site is a landfill and cannot accept liquid waste after 30 October 2007.

Acceptance

In our view, waste that is received at the landfill and deposited into, or onto, the ground with no intention to remove it again, in the short term, has been accepted for disposal. The products of decomposition from a specific landfill, such as leachate and landfill gas condensate, are not 'accepted' at that landfill but arise on site. They can therefore continue to be managed at the site in accordance with the permit.

Commonly asked questions

Can leachate from other landfills be accepted at our leachate treatment plant?

Our view is that the ban on landfilling liquids is intended to mean into or onto the land. Although the leachate treatment plant may be part of the permitted landfill installation, we do not believe this prohibits **treating** imported leachate or liquid wastes if that would otherwise be allowed by the permit.

Can leachate be re-circulated?

Leachate arising in the permitted landfill is not being 'accepted' for disposal at the site, and can be re-circulated, with or without treatment. We consider that leachate from outside the landfill if intended for re-circulation is being 'accepted' for disposal (with or without treatment) and is not allowed.

Can landfill gas condensate be returned to the landfill?

Our view is the same as for leachate re-circulation.

Can we accept packaged liquid waste such as bottles of drink or shampoo?

This is covered by our guidance in WDFDL: you may accept a load provided that the total free draining liquid, including any packaged liquid, is not more than 250 litres or 10% of the load volume, whichever is lesser.

Can non-hazardous liquid wastes be mixed with a solid for landfill?

We consider mixing liquid wastes with sawdust or sand unacceptable - its purpose is to get around the ban on liquid wastes. We regard these wastes, which are likely to leach out again once in the landfill, to have been only temporarily immobilised or disguised and therefore have not ceased to be liquid wastes for the purpose of the Landfill Directive.

In addition, such mixing would not be acceptable as a form of pre-treatment in that it would not satisfy the three-point test. It cannot therefore be advanced as being consistent with the objectives of the Directive.

Our intention is prevent the Directive being subverted by activities aiming to circumvent the liquid waste ban. We recognise that there are situations where this is not the intention, for example where sand has been used to contain or mop up spills. Such wastes can continue

to be landfilled and Waste Acceptance Procedures can be used to determine the nature and origin of such wastes.

If a solid waste is transported to a landfill using water as a carrier is that water banned from landfill?

Where a liquid is used to help move waste to a landfill, usually by pipeline, then this may not constitute the acceptance of waste in liquid form. Each case will need to be treated on its merits and you should discuss this with us.⁸

Responsibilities

As liquid waste can no longer be landfilled, producers should arrange for alternative treatment. Part B gives advice on how to do this.

Landfill operators are legally required not to accept liquid waste. It should be obvious at one of the following stages whether a waste is liquid:

- initial discussions with the waste producer or contractor about the nature of the waste and any contractual arrangements;
- checking the paperwork with the load;
- initial visual inspection of the waste;
- inspection of the waste when loads are deposited;
- periodic 'audit' of the producer's waste management arrangements.

Part B: Considering alternatives to landfill

Introduction to part B

This part of the guidance looks at how you can identify alternative ways of dealing with liquid waste. This is not intended to be a comprehensive list or a guide to the technical merits of waste treatment methods. There are many other sources of technical guidance, and if you are a waste producer your waste contractor should be able to advise you further.

Choosing an alternative: environmental considerations

We expect you to comply with the new rules. When you're deciding which treatment options to select instead, we recommend that you review the overall chain of production and management of the waste. In particular, you should look at whether it is possible to recover more 'value' from the waste.

You should consider the aims of the Landfill Directive to:

- encourage the prevention, recycling and processing of waste;
- ensure that, where landfill is used for the disposal of waste, measures are taken to reduce as far as possible negative effects on the environment as well as any resulting risk to human health during the whole life-cycle of the landfill.

⁸Interpretation of the Landfill (England and Wales) Regulations 2002 (as amended), Chapter 9, Defra November 2005

You should also consider government policy. The Government wants the management of waste to 'move up the waste hierarchy'. In order of preference, the waste hierarchy is:

- waste reduction
- reuse
- recycling and composting
- energy recovery
- disposal.

Choosing an alternative: practical considerations

You need to consider the following practical aspects of the available treatments:

- cost
- availability
- reliability
- sensitivity to waste composition changes
- technical difficulty.

Choosing an alternative: technical consideration

A suitable treatment for your waste is likely to depend on its particular physical and chemical properties. You may be able to treat the waste yourself, although treatment may need to be done at a permitted facility.

Removing packaging

For liquid in packages that exceeds the allowed quantities, you first need to remove the packaging, either manually or mechanically (e.g. by shredding plastic bottles/ cartons and collecting the liquid).

Separating solids

Liquid wastes may consist of liquid only or, more commonly, may also contain solids. For wastes containing solids, you will need to decide whether the waste would be easier to manage if the solids were separated. For some wastes, the liquids could be easily disposed of to sewer or to a waste treatment plant once the solids are separated.

Dealing with liquid/solid mixtures

Options for dealing with mixtures include:

- recovery of the waste by spreading onto suitable land;
- processing, probably along with other wastes, in a biological process such as composting, anaerobic digestion (AD) or mechanical-biological treatment (MBT);
- filtration in a filter press.

The first two would suit biodegradable wastes, but other wastes may also benefit from, or be beneficial to, the process.

Thermal treatment or advanced oxidation processes may be able to deal with the mixed waste, but are likely to be more expensive than dealing with the separated solids or liquids.

Liquids

If the waste is, or has been separated to produce a liquid then the following options may be appropriate.

- Biological treatment. This would be suitable for biodegradable liquids. Options would include a discharge to sewer or waste water treatment works (WwTW), other biological treatment plant, recovery to land or biological processing via composting, AD or MBT. All of these options are subject to regulatory control and advice on complying with environmental legislation is provided by Netregs.⁹
- Advanced oxidation processes. This would be suitable where the waste has a high chemical oxygen demand (COD) that is not readily biodegradable. A number of processes are commercially available.
- Thermal treatment - this is suitable for organic waste streams.
- Chemical treatment - this is more likely to apply to inorganic liquid wastes.

Solids

The solids separated from a liquid may be suitable for landfill. Producers should still consider whether their management can be 'moved up the waste hierarchy'. The main options are likely to be.

- Biological treatment. This would be suitable for biodegradable solids. Options might include recovery to land or biological processing via composting, AD or MBT.
- Thermal treatment. This may be an option for organic waste streams.

Getting help

For some waste streams, choosing an appropriate waste management option may be complex. Waste producers may need to get advice from their waste contractor or trade association.

Waste producers also need to consider who will provide the alternative solution. While for large producers treatment of the liquid waste in-house may be an option, most will need to get this service from either their waste contractor or their waste water company.

More difficult non-hazardous liquid wastes

We reviewed which liquid wastes were landfilled in 2005, and discussed our findings with the waste industry.

We understand that alternative arrangements have been or are being made for many of the waste streams that have been landfilled up until now.

⁹www.netregs.gov.uk

You have advised us that some smaller waste streams are more difficult or expensive to treat. We've listed these below along with possible treatment options.

Waste characteristic	Potential options
High COD	Biological; advanced oxidation; thermal
High hard COD	Advanced oxidation; thermal
High solids – not separable	Advanced separation; recovery on land; thermal
High detergent concentration	Advanced oxidation; thermal
Cannot mix with water	Thermal
Off-spec batches eg drinks, cosmetics, shampoos, paints	Remove packages. Then options as above.

As a waste producer, your first step should be to discuss any waste management problems with your waste contractor or trade association.