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**This publication was withdrawn on 21 April 2021**

It has been replaced by the updated [Landfill operators: environmental permits](#).

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## Application of treated landfill leachate to short rotation coppice (SRC)

### Purpose of this note

Landfill operators are increasingly looking at new techniques to manage their sites. Amongst these is the use of short rotation coppice (SRC) as part of a landfill leachate treatment process. We think this technique can be an environmentally acceptable option if managed appropriately. This note describes our approach to regulating the application of treated landfill leachate to SRC. This position does not apply to other activities such as the spreading of leachate on grassland or crops other than coppice.

### What is the activity?

Leachate is produced as waste degrades within the landfill. It is collected within the landfill, then extracted for treatment. After treatment the leachate is more commonly disposed of by consented discharge to a sewer or watercourse. However, in some cases where these options are not available leachate is being applied to SRC.

Short rotation coppice consists of densely planted, high-yielding varieties of either willow or poplar. These plants are harvested on a 2 to 5 year cycle with the rootstock remaining in the ground. The harvested wood may be used as a fuel. Coppice plantations can be viable for up to 30 years. The irrigation to SRC technique makes use of the coppice's high water demand during the growing season. The treated leachate is applied in a controlled manner at the base of the plants during the growing season and periods of soil moisture deficit. The coppice root system utilises the water and nutrients within the treated leachate.

The leachate irrigation activity is operated within an engineered system that provides containment to the treatment process.

### Environment Agency approach to regulation of the process

We consider the application of treated leachate to SRC to be a biological treatment operation. In accordance with the Waste Framework Directive categorisation of operations it is an Annex IIA D8 activity<sup>1</sup>. Disposal of leachate and its contaminants within the soil matrix is prohibited. This is because such disposal is considered to be 'D2 disposal of waste to land' in Annex IIA and controlled by the Landfill Directive. The Landfill Directive bans the disposal of liquid waste to land.

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<sup>1</sup> Further information on classification of activities can be found in our guidance '[303\\_05 Guidance to determine whether a waste activity is a disposal or recovery operation](#)'

The leachate irrigation process will be subject to the Waste Framework Directive and Groundwater Directive. It may also be subject to the IPPC Directive. This will be the case where it forms part of an IPPC installation as a directly associated activity or where it is a listed activity in its own right. Activities subject to the IPPC Directive have additional requirements. These include the assessment of Best Available Techniques (BAT) and adherence to the additional general principles. In determining BAT, consideration should be given to the 12 points set out in Annex IV of the IPPC Directive. The additional general principles are set out in Article 3 of the IPPC Directive and include the avoidance of waste production, efficient energy use and taking measures to prevent accidents and limit their consequences.<sup>2</sup>

We will assess applications on a site by site basis. Pre-treatment of leachate prior to irrigation is required to prevent the accumulation of contaminants in the soil. Our guidance on the treatment of landfill leachate sets out indicative standards for operation and environmental performance of leachate storage and treatment facilities<sup>3</sup>. It is relevant to the storage and treatment processes prior to being applied to the coppice. We will require the operator to monitor the operation to establish background environmental conditions and to demonstrate that there is no negative impact to soil, surface water or groundwater.

Emission standards related to the background soil quality will be set within the permit. The process must not cause significant deterioration of the soil quality, by contaminating the soil that the coppice is planted within. It is not intended to permit an activity to load pollutants in the soil up to a limit, but instead to use the principles of prevention and minimisation. The process can only be justified as a means of providing nutrients and moisture to the planted material. Category 1 and 2 listed substances and persistent bioaccumulative and toxic (PBT) substances must be excluded from the system by pre-treatment of the leachate. In some circumstances leachate irrigation may not be an appropriate treatment technique.

### **If you are a waste operator**

You will need to apply for a permit<sup>4</sup> or a variation to an existing permit. The application must be supported by a site specific environmental risk assessment. You will need to satisfy us, on a site specific basis, that :

- the environmental risk assessment establishes the environmental consequences of the activity at the specified location, and that the risks are acceptable,
- an assessment of candidate leachate treatment techniques has been undertaken and the most appropriate techniques have been selected.

<sup>2</sup> Guidance can be found on these matters in [IPPC H1 Environmental Assessment and Appraisal of BAT](#) and [IPPC H7 Guidance on the protection of land under the PPC regime](#).

<sup>3</sup> [Sector Guidance Note S5.03 Guidance for the treatment of landfill leachate](#)

<sup>4</sup> From 6 April 2008 an environmental permit will be required by the Environmental Permitting (England and Wales) Regulations 2007.

- having assessed all potential techniques, the leachate treatment technique and irrigation to SRC are considered the Best Available Techniques and capable of processing the leachate generated at that site,
- the leachate will be treated prior to application to the coppice.
- the treated leachate will be appropriately characterised prior to application to the coppice, and suitable indicators for monitoring the performance (both success and failure) of the processes are put forward,
- the coppice species have been selected with evidence that they are suitable for that purpose,
- the SRC process is a contained/closed system that will prevent the escape of leachate from the process system. For example there should be an engineered barrier and a surface water management system to prevent percolation and horizontal migration.
- it will not cause any significant deterioration to the soil quality. It must be demonstrated that the treated leachate is being treated by the coppice environment.
- it will be managed in a manner that will ensure that the environment is protected. For example by only irrigating when there is a soil moisture deficit and also irrigating at an appropriate rate to prevent, when there are periods of higher rainfall, runoff and leaching of the treated leachate. You should include an explanation of your operating techniques with respect to for example soil type, weather, soil moisture deficit, application rates, soil infiltration rates and slope.
- the management system should include contingency planning for leachate management when unsuitable conditions arise.
- the process will be monitored regularly including the leachate quality prior to being irrigated, the background soil quality, application rates and soil conditions, and the soil quality after the process has been applied. Appropriate indicators and techniques should be used to monitor the activity.
- where the SRC is sited on a landfill cap the integrity of the cap will be maintained and not damaged by roots or pipework.

The above is not an exhaustive list. *The advice given in this briefing note will be included within the Sector Guidance Note s5.03 on the treatment of landfill leachate, when it is next reviewed.*