

Code of Good Practice For Landspreading Paper Mill Sludges

Revised December 2022



Paper - the sustainable, renewable choice

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The Code is a revision of an original produced by The Paper Federation of Great Britain in 1998. This revision has been produced by the Process Issues Committee of CPI. Those mills most actively involved in landspreading were represented and leading practitioners of landspreading paper mill sludges were consulted during the process, including contractors and regulators.

The information provided within this document was accurate at the date given below. CPI cannot accept any liability in relation to its use.

Enquiries arising from the Code should be addressed to:

Confederation of Paper Industries
Kingston House
Lydiard Fields
Swindon
Wiltshire
SN5 8UB

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1. Objective of the Code

The objective of the Code of Practice is to define best practice for landspreading sludges from the UK Paper Industry. It is not a legal document, but it highlights the key legal requirements.

The Code provides the basis for the activity to be managed professionally and responsibly, so ensuring that this option continues to be recognised as a “sustainable practice”.



1. The Confederation of Paper Industries (CPI) is the trade association for the Paper Industry in the UK and has within its Membership paper manufacturers, corrugated packaging manufacturers and mill-owned and independent recovered paper merchants and exporters. The UK manufactures just under 4,000,000 tonnes of paper each year, with over 40 paper mills still in production. Around 20,000 people are employed directly by the sector. With over 10,000,000 tonnes of paper consumed annually in the UK, manufacture of pulp & paper should be well placed to play an important role in the growth envisaged for the manufacturing sector.
2. Paper sludge or crumble is a by-product of the paper recycling and manufacturing process and consists mostly of short wood fibres (cellulose) and clay fillers. Paper sludges are derived primarily from the recycling of waste paper. Estimated production of paper sludge in the UK is around 950,000 tonnes (fresh weight).
3. Whilst this Code covers landspreading as a recovery option, it must be emphasised that the principle aim should be to achieve the waste hierarchy objectives of minimise, then recover/recycle.
4. Paper mills have been spreading sludges on agricultural land for more than 30 years and over that period have demonstrated that this practice has proven agricultural benefit when managed properly. This Code uses this experience to identify the best management practices, in conjunction with Environment Agency Guidance, in the landspreading of paper mill sludges and management of the landspreading process.
5. This Code is aimed at those who have a practical involvement in landspread operations. Mills may contract out this operation at any point. The requirements of the regulations and this Code will apply equally to mill personnel and contractors.
6. This Code links to the key requirements of the law. It does not replace them. This Code and any supporting procedures should be linked into the mill environmental management system.
7. For the purposes of the Code, Paper Mill Sludge includes all sludges produced from papermaking operations, including de-inking, primary and/or secondary effluent treatment processes (EWC Codes 03 03 05, 03 03 10 & 03 03 11).
8. This Code is directed at sludges spread on agricultural land. (Other pulp & paper mill wastes may be landspread but are not covered by this Code: 03 03 01 waste bark and wood, pulp from virgin timber, and 03 03 09 Lime mud waste).
9. Contacts for sources of further help and information are given, where relevant, within the body of this Code and in the Additional Information Section at the end.
10. The Code of Practice is supported by the following reports:
 - SAC Report "The Application of Papermill Sludge to Agricultural Land" commissioned by the CPI (Paper Federation). The report includes an overview of factors affecting soil fertility, potential environmental risks and common benefits of spreading paper mill sludges.
 - Landspreading on agricultural land: nature and impact of paper wastes applied in England & Wales, Science report SC030181/SR August 2005 commissioned by the Environment Agency containing information on the extent, nature and environmental implications of applying paper mill sludges to agricultural land in England & Wales.
 - EQual Paper Sludge field trials; Summary Report February 2015 LIFE10 ENV/UK/176 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/459496/PS_field_trial_summary_report.pdf. The report concludes "The PS field trials demonstrated the agricultural benefit of PS as a valuable liming material and soil conditioner" whilst highlighting "the need to follow good agricultural practice in particular, the Confederation of Paper Industries Code of Practice".
11. Copies of the Code of Practice will be available to the Environment Agency (EA), National Resources Wales (NRW), the Scottish Environment Agency (SEPA), Local Authorities and other interested parties.

1. Paper sludge or crumble contains short cellulose fibres which are not suitable for use in paper production. Sludge from recycling processes also contains mineral components such as kaolin, talc and calcium carbonate, along with trace ink residues and nutrients.
2. Whilst the same in principle, papermaking processes are diverse and the resulting sludge from each mill can differ. Hence the benefits from landspreading paper sludges are unique to each mill. It is incumbent upon each mill to define the benefits of their particular sludge application.
3. As with any other application of material to land, proprietary or otherwise, correct application is essential to realise the benefits and prevent any detriment.
4. Key benefits of paper sludge application to land are outlined below. Not all are applicable to every sludge. Potential risks from incorrect application are also highlighted.



Benefits

5. Paper sludges have an organic matter content, generally around 50% dry weight. Organic matter can make a significant contribution to the physical structure and biological nature of the soil. Application of sludges can lower the bulk density of the soils, increase moisture availability and improve drainage.
6. Additions can also improve nutrient cycling and soil fertility, increasing biological activity in the soil and improving the size of the microbial and faunal population.
7. Sludges are generally slightly alkaline, and with their chalk/clay filler content have a liming value.
8. Sludges can, in some instances, supply nutrients, in particular phosphorus, potassium and sulphur.



Risks

9. Paper sludges generally have a high carbon to nitrogen ratio, which can lead to nitrogen immobilisation if not balanced or applied in a controlled manner. This risk can turn into a benefit when used to mop up high levels of nitrogen from other applied organics.
10. Chemical elements such as cadmium, copper, lead, nickel can be present in sludges although in most circumstances their concentrations are likely to be extremely low.
11. Paper sludges can contain phosphorus which, although a benefit in some cases, can be a potential risk in areas where there is a high P Index in the soil (>4) and an issue with high phosphate levels in the local watercourse.

NOTE: Environmental Permitting Regulations only apply to England and Wales. Landspreading in Scotland is under an exemption from Waste Management Licensing (See regulatory links in "Additional Information").

1. Landspreading of sludges is regulated through the Environmental Permitting Regime (EPR) which requires operators to obtain a permit and then a site specific deployment in order to spread material to land. The landspreading permit is a one-off and attracts an application fee. The cost of deployment is based on a banded scale according to the EA classification of risk. The Permit provides for ongoing supervision by regulators.
2. The EPR covers facilities previously regulated under the Pollution Prevention and Control regulations 2000 and Waste Management Licensing and exemption schemes (along with some parts of the Water Resources Act 1991, the Radioactive Substances Act 1993 and the Groundwater Regulations 2009).
3. The Environmental Permitting (England & Wales) 2016 Regulations can be downloaded from <https://www.legislation.gov.uk/uksi/2016/1154/contents/made>
4. There are two types of permit available: Standard and Bespoke. A Standard Permit is a simple permit that requires the permit holder to abide by a set of standard rules. Each category of activity has its own fixed set of rules, previously consulted on with industry by the EA. As they are part of a standardised system, these Standard Permits are quicker to apply for, involve simpler processing and have clear guidance.
5. Landspread of sludges is covered by a Standard Permit. The Standard Rules that apply are SR2010 No.4 Mobile Plant for Landspreading. These rules cover land treatment resulting in benefit to agriculture or ecological improvement.
6. Paper wastes with EWC codes 03 03 05, 03 03 09, 03 03 10 & 03 03 11 may also be used for the reclamation, restoration or improvement of land again under a Standard Permit. The Standard Rules that apply here are SR2010 No.5 mobile plant for the reclamation, restoration or improvement of land. These rules may be downloaded via www.gov.uk/government/publications/sr2010-no5-mobile-plant-for-reclamation-restoration-or-improvement-of-land. The Code does not apply directly to this in its detail, but the spirit and principles should apply.
7. The main EA guidance Landspreading: how to comply with your permit provides operators with specific guidance on how to take control of any risks to health and the environment and, in so doing, how to comply with their environmental permit. The guidance note forms the basis of this Code of Practice.



Note: This Code of Practice must be read in conjunction with Technical Guidance Note EPR 8.01 and Appendices A to D.

8. Landspread operators need to be aware of the requirements for operating within a Nitrate Vulnerable Zone (NVZ). A number of the key requirements for operating within an NVZ are covered in the SR2010 No.4 permit and therefore apply whether the material is spread inside or outside of an NVZ. Suppliers should, however, be familiar with any **additional** requirements prescribed by the NVZ regulations/guidance to support farmers in complying. Additional requirements include the N Max limits (from January 2014). Operators need to be able to provide farmers with information on the availability of nitrogen in the paper sludge, to allow the farmer to comply with N max limits. Field stockpiles are required to be constructed in a manner that is "... as compact as reasonably possible..." (from 16 May 2014). The stockpile should take up as little ground area as is safely possible without risk of it collapsing. Also from 16 May 2014, on land that slopes at 12 degrees (1 in 5 / 20%) or greater, stockpiles should be sited at least 30 meters from a watercourse. Operators should familiarise themselves with the current NVZ guidance document prior to undertaking work within an NVZ.

www.gov.uk/government/publications/nitrate-vulnerable-zones-in-england-guidance-on-complying-with-the-rules-for-2013-to-2016

9. In addition to an environmental permit, landspreading of sludges is also covered by Duty of Care with respect to the transport and transfer of the sludges. Section 34 of the Environmental Protection Act 1990 defines "Duty of Care" responsibilities for "any person who imports, produces, carries, keeps, treats or disposes of controlled waste". Obligations under the Duty of Care require "every reasonable effort" to be made to ensure that there is correct and safe handling of the sludges and sufficient records need to be kept to enable an audit trail to take place. The Environmental Protection (Duty of Care) Regulations 1991 can be downloaded via: www.opsi.gov.uk/si/si1991/Uksi_19912839_en_1.htm.

The necessary steps to comply with these regulations are outlined in **Waste Management The Duty of Care A Code of Practice** which can be downloaded via:

For England & Wales:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1073585/Waste_duty_of_care_code_of_practice.pdf

For Scotland:

https://www.sepa.org.uk/media/162520/duty_of_care_recycling.pdf

Links to further information

Environmental permitting on the DEFRA website (GOV.UK):

<https://www.gov.uk/topic/environmental-management/environmental-permits>

<https://www.gov.uk/government/publications/landspreading-how-to-comply-with-your-permit/landspreading-how-to-comply-with-your-environmental-permit>

NetRegs in Scotland:

<https://www.netregs.org.uk/>

Defra: Nitrate Vulnerable Zones (with links to Guidance & Regulation)

www.gov.uk/nitrate-vulnerable-zones

Other Regulatory Guidance and related Codes

Protecting our water, soil and air – a code of good agricultural practice for farmers, growers and land managers:

www.gov.uk/government/publications/protecting-our-water-soil-and-air

Defra Fertiliser Manual RB209

www.gov.uk/government/publications/fertiliser-manual-rb209

EA General Guidance: How to you'll be regulated environmental permits

<https://www.gov.uk/guidance/how-youll-be-regulated-environmental-permits>

Managing waste / Duty of Care (gov.uk)

www.gov.uk/managing-your-waste-an-overview/overview



Operators should apply for a Standard Permit for landspreading paper sludges. In order to do this, the operator must comply with the Standard Rules SR2010 No.4 Mobile Plant for Landspreading:

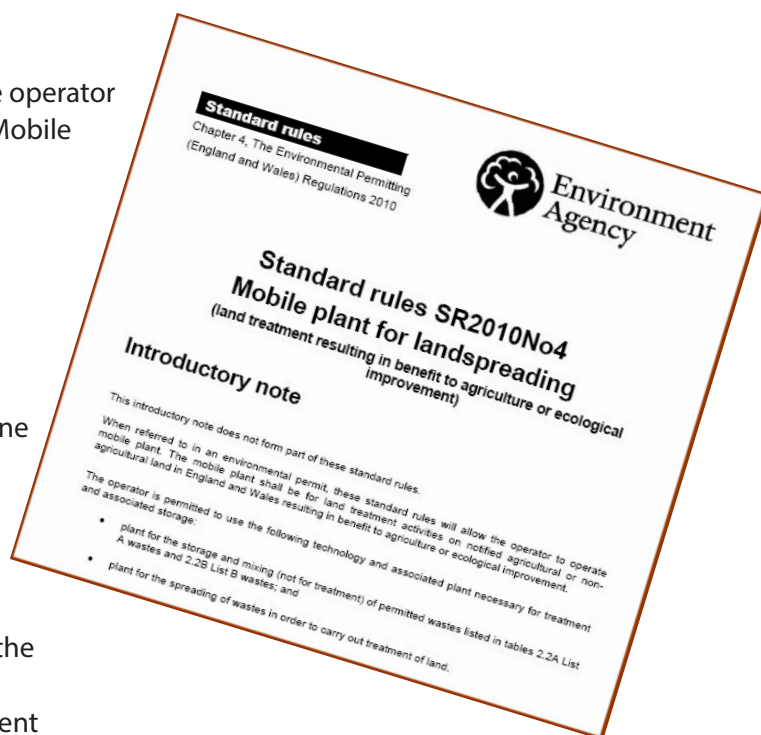
www.gov.uk/government/publications/sr2010-no4-mobile-plant-for-land-spreading

and meet the following risk criteria:

- No more than 3000 tonnes to be stored at any one time and for no longer than 12 months;
- Landspreading must not be carried out within 10m of any watercourse or 50m of any spring, well or borehole;
- The quantity of sludge applied does not exceed 250 tonnes per hectare (or lower if specified on the deployment form.
- The operator shall maintain an odour management plan
- Waste shall not be stored for longer than 12 months

The permit details requirements for monitoring, benefit assessment and deployment notification as per the Standard Rules above.

The Operator, for the purposes of the permit, is defined as the “person who has control over the operation...”. This can be the Mill or it may choose to contract out all or part of the operation. Mills should ensure that contractors are competent as per the guidance and that **any contract has clearly defined roles and responsibilities**, particularly in relation to any permit requirements.



Farmer Liaison

Before any site assessment is made, the farmer (landowner or tenant) should be informed by either the mill or the contactor of:

- The potential benefits of applying sludge to land;
- The process of the landspread activity and follow up assessments;
- Contact details - ongoing and emergency;
- Responsibilities of all parties under the permit and duty of care, including, where appropriate, when, how and by whom the sludge application will be incorporated;
- Within an NVZ, information on the availability of nitrogen.

The information required from the farmer must be clearly defined and should include:

- Any physical characteristics of the site which would affect the spreading of sludge (e.g. areas of poor drainage, heavy textured or stony soils, adverse ground stability or topography, etc.);
- The location of land drains, springs, wells and boreholes, disused mineshafts/workings/adits, swallets (These areas require a no-spread zone around them to prevent any pollution of groundwater);
- The cropping regime;
- Amounts of fertiliser and other waste which have been or are about to be applied to the site;
- Any restrictions that might apply to the land e.g. land entered into Agri-environmental schemes or land on or near to protected sites (Site of Special Scientific Interest (SSSI) Scheduled Ancient Monuments etc.).

The farmer's copy of the site assessment report, if provided, should contain a clear explanation of what the report is, what the information means and how it is relevant to the landspread operation.

The farmer should give written confirmation of receipt of the information and of his awareness of the relevant codes and permit requirements, particularly where the farmer has a specific responsibility for incorporating the paper sludge or any other action in the spreading operation. The farmer should also give written approval for the sludge to be spread, along with an assurance that no other non-agricultural waste has been or will be applied to the same field within 12 months prior to or following a paper sludge application.



Transport

Transport of paper sludge is covered by Duty of Care (see Legislative Framework 4.9). The Mill and/or the contractor must ensure that:

- A waste transfer note is issued to cover every load leaving the mill site. "Season Ticket" transfer notes can be used for multiple loads to the same site over a specified period of time. EWC codes must be quoted in the note;
- Records are kept to track every tonne of sludge leaving the mill site and delivered to the landspreading site. These records should be kept in conjunction with the Deployment records under the permit. Records should be kept for a minimum of two years as per the Duty of Care requirements or as specified by your Permit.

Transport best practices include:

- Transport company must be registered as a Waste Carrier;
- Efficient vehicles should be used for transporting the sludge ensuring minimal environmental damage;
- Vehicles must be maintained as legally roadworthy;
- Precautions must be taken to prevent sludge escaping from the vehicle during transportation;
- Routing and scheduling of vehicles should be carried out so as to minimise disturbance to local residents;
- Local bylaws should be checked to identify any other obligations to be met in relation to the transportation or landspreading of the sludge.

Risk assessments and sensitive receptors

- Care should also be taken to minimise any nuisance effect that could arise as a consequence of the landspreading activity. Potential nuisance causes being:
 - Odour - It should be noted that there is a potential risk of odour from the storage and spreading of sludge. All operators must have an odour management plan covering both storage and incorporation of the sludge, where applicable, to minimise any impact from odour. The EA's Horizontal Guidance H4 gives guidance on Odour Management Plans: <https://www.gov.uk/government/publications/environmental-permitting-h4-odour-management>
 - Mud on the road, here provision should be made to have clean up equipment on standby
 - Routing of vehicles
 - Access to sites: provision must be made not to cause damage, with any repairs effected as soon as possible to any inadvertent damage.
- Consideration should be given to nearby residents in the form of some prior notice and contact details for concerns;
- A complaints procedure should be in place to follow up any problems raised.

Sludge storage, sludge & site assessments and landspreading

Considerations to mitigate the impact of access to sites include:

- The use of "Trackway" at the site entrance
- Wide tyres on spreading vehicles

There is a requirement for a Contingency Plan for managing landspread operations during extreme weather conditions when access to land for spreading is either restricted or prohibited. The EA has produced a short guidance on Contingency Plans for Waste Storage (covering all materials spread to land, not just paper sludges). The guidance is included **for reference** as an annex to this code.

In some instances, there are benefits to surface spreading sludges on grassland without incorporation. Where a higher application is required to realise the benefit, best practice is that the applications are split, where possible, into two or three events to avoid a negative impact of smothering the grass.

Where sludge is to be incorporated, best practice is to incorporate thoroughly and as soon as possible after spreading.

Follow-up Assessment

Follow up assessments of each site should be made by the Appropriate Technical Expert (see EPR 8.01 for guidance as to “Appropriate Technical Expert”) to ensure that all requirements have been met. A written assessment report should be submitted to the Mill and/or contractor as agreed. This process should be controlled by a formal procedure which outlines the actions and responsibilities for the follow up assessments.

Contractors must report deviations in practice from this Code or any environmental related issues that have occurred as a result of either transporting or spreading paper sludges. Environmental Management Systems should track deviations and corrective actions to correct and learn from any issues.

Contract

Careful consideration needs to be given to the terms of the contract and the following recommendations are given to ensure that the right framework is in place to provide professional and responsible management and meet Duty of care obligations:

- Duty of care and permit responsibilities are clearly defined for all parties;
- The contractor undertakes to ensure regular collection and transportation of sludge as specified;
- The accident liability practices and responsibilities are defined for all stages;
- Adequate provision is made to cover liabilities and accidents;
- The size, type and suitability of vehicles are stated, including a statement on maintenance and repair schedule;
- The exact responsibilities for vehicle loading are defined;
- Procedures are defined for the transfer of ownership of the sludge through the various stages;
- The requirement to attend regular (defined) meetings to manage the contract;
- Defined payment procedures;
- Provisions for renegotiating the contract in the event of circumstances changing on either side;
- Termination conditions for both parties under various conditions as defined.



Key Process Indicators (KPIs) should be defined to ensure adequate management controls are in place throughout the process, from sludge production through to landspreading, both in terms of:

- The “quality” of the sludge – consider moisture content, odour, colour, and
- Contract management – consider tonnes to landspread, complaints, audit findings.

Action points with responsibilities should be defined for each KPI along with the purpose of that KPI.

Regular meetings should be scheduled between the Mill, contractor and expert advisors.

Emergency Procedures

The emergency procedures relating to the landspreading activity should be integrated into the site Environmental Management System emergency documentation.

Events or incidents could be regarded as potential or actual emergencies if:

- There could be a threat to the continuation of the landspread activity;
- There was a spillage at the Mill or landspreading site that was not contained and entered a watercourse;
- There had been incidents reported as the potential cause of damage;
- The road conditions were adversely affected (e.g. mud on the road);
- The Mill was, as a result, exposed to financial liability for whatever reason.

Where appropriate the relevant regulatory authorities should be informed “without delay” and the necessary corrective action taken to remedy the problem (section 5.4 of EPR 8.01 refers).

Environmental Management System

All procedures relating to the landspreading activity should be incorporated in the Mill’s (and contractor’s where appropriate) Environmental Management System, including risk assessments and complaints procedure.

Audits

An independent audit programme should be put in place to audit all aspects of, and procedures relating to, the landspread activity. Audits should be part of the Environmental Management System.



In addition to the links contained within the body of this Code the following may prove useful:

National Waste strategies

England

www.gov.uk/government/uploads/system/uploads/attachment_data/file/69401/pb13540-waste-policy-review110614.pdf

Northern Ireland

www.doeni.gov.uk/towards_resource_management.pdf

Scotland

www.scotland.gov.uk/Resource/Doc/314168/0099749.pdf

Wales

<http://wales.gov.uk/docs/desh/publications/100621wastetowardszeroen.pdf>

Waste management legislation

The Waste (England and Wales) Regulations 2011

www.legislation.gov.uk/ukxi/2011/988/contents/made

The Waste (Scotland) Regulations 2011

www.legislation.gov.uk/sdsi/2011/9780111012185/contents

The Waste Regulations (Northern Ireland) 2011

www.legislation.gov.uk/nisr/2011/127/contents/made

The Waste Management Licensing (Scotland) Regulations 2011

www.legislation.gov.uk/ssi/2011/228/contents/made

The Waste Management Licensing (Amendment) Regulations (Northern Ireland) 2009

www.legislation.gov.uk/nisr/2009/76/contents/made

Guidance on landfill tax

http://customs.hmrc.gov.uk/channelsPortalWebApp/channelsPortalWebApp.portal?_nfpb=true&_pageLabel=pageExcise_ShowContent&propertyType=document&id=HMCE_CL_000509

Other Useful Sites

Netregs: (For Scotland & Northern Ireland)

www.netregs.gov.uk

Water Framework Directive information site:

www.euwfd.com/html/wfd_ic.html

EU Nitrates Directive:

http://ec.europa.eu/environment/water/water-nitrates/directiv.html?lang=_e

United Kingdom Laboratory Accreditation Service:

www.ukas.org/

COSHH:

www.hse.gov.uk/COSHH/index.htm

All web links were correct at the time of going to press