



Pollution inventory reporting - paper and pulp guidance note

Environmental Permitting (England and Wales) Regulations 2010
Regulation 60(1)

LIT 7685 and 1221_10

Version 4 December 2012

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1. Introduction

If we regulate your activity as an A1 installation under the Environmental Permitting (England and Wales) Regulations 2010 (EPR) you will need to submit data to the Pollution Inventory.

You need to report each year. The system opens for reporting on 1 January and the deadline for submitting is 28 February.

Our general guidance sets out how to report and provides information applicable to all business and industries.

In this guidance you will find helpful information specific to the paper and pulp sector.

You can find additional information on the web:

Pollution Inventory Guidance and glossary: www.environment-agency.gov.uk/pi

REPI: <http://www.environment-agency.gov.uk/business/topics/pollution/32272.aspx>

2. Emissions to air

2.1. Relevant pollutants

The main air emissions from paper and pulp activities are shown in Table 1. Use the table as a guide only and check that there are no other pollutants emitted from your installation.

Table 1 Main air pollutants emitted by paper and pulp activities and their main sources

Main air pollutants	Main sources	
	Paper	Pulp
CH₄	Anaerobic effluent treatment plant,	Anaerobic effluent treatment plant
Chloroform	Bleaching, effluent treatment plant	Recycled fibre pulping and de-inking, bleaching with chlorine dioxide or sodium hypochlorite
CO	Papermaking, effluent treatment plant	
CO₂	Effluent treatment plant	Semi-chemical, with recovery. Effluent treatment plant
Formaldehyde	From resins used in papermaking.	
NO_x	Effluent treatment plant	Neutral sulphite semi-chemical, with recovery. Effluent treatment plant
Particulate matter	Finishing/converting operations.	Neutral sulphite semi-chemical, with recovery.
VOCs	Drying process.	Mechanical & chemi-mechanical pulp

Combustion process releases are not covered in this table.

2.2. Emission sources

2.2.1. Point source emissions

These emissions are exhausted via a stack or vent, that is, a single point source into the atmosphere. Abatement equipment, for instance cyclones for removal of particulate matter, can be incorporated into the exhaust system prior to discharge to atmosphere.

2.2.2. Fugitive emissions

Fugitive emissions are those that are not released from a point source such as a stack. Fugitive emissions are not considered to be significant in the paper and pulp industry.

You only need to report fugitive emissions that leave the installation to the PI. You do not need to report contained spills but you do need to report vapour emissions that may have dispersed.

3. Emissions to water

Emissions of substances to water can be either direct to controlled waters or indirect, following transfer to off-site effluent treatment plant (most mills discharge via their own or a municipal treatment works). Releases to water are a major issue in this sector. Although actual water loss to the environment is low, increased emissions result from the knock-on effects of high water use.

Guidance on what constitutes an emission or transfer is contained in the general PI Guidance document.

3.1. Relevant pollutants and emission sources

A wide variety of substances is present in water discharges from paper and pulp processes (with some residual organic constituents of the effluent not known in detail). Table 2 illustrates the main pollutants emitted to water and their main sources. Not all of these are PI reportable substances, but you need to take account of any reportable substances emitted in association with them (for example, metal contents incorporated with total suspended solids). Use the table as a guide only, and check that there are no other reportable substances emitted from the process or required to be monitored by permit condition.

Table 2 Main water pollutants generated by paper and pulp activities

Main water pollutants	Main sources	
	Paper	Pulp
Alcohols/acids	Papermaking	Pulping processes
Cadmium	Papermaking	Pulping processes, bleaching
Chloroform		Bleaching, RCF pulping and de-inking
Defoamers	Papermaking	RCF pulping and de-inking
Formaldehyde	Papermaking	
Heavy metals	Papermaking	Pulping processes, bleaching
Hg	Papermaking	Pulping processes, bleaching
NH₃	Papermaking, effluent treatment	

Particulate matter/TSS	Papermaking	Pulping processes, bleaching
Pentachlorophenol	Papermaking	RCF pulping and de-inking
Phosphates/nitrates	Papermaking, effluent treatment	Pulping processes,
Sulphides	Papermaking, effluent treatment	RCF pulping and de-inking, mechanical pulping
Sulphites & sulphates	Papermaking	RCF pulping and de-inking, mechanical pulping
Surfactants	Papermaking	RCF pulping and de-inking
Wood organics	Papermaking	Pulping processes, bleaching

The resulting discharge of the above substances depends on the 'in process' preventative measures (good housekeeping, re-use) and the presence and technical standards of wastewater treatment facilities.

4. Off-site transfers

Wastes must be classified by the European Waste Catalogue (EWC) 6-digit code(s) and by the relevant Waste Framework Directive disposal or recovery code(s) (D&R).

There is no reporting threshold for hazardous wastes, which are indicated by an asterisk in the EWC. For all other EWC/D&R code combinations, a reporting threshold of 5 tonnes applies.

Any transfer of waste off-site to a third party is covered by the Duty of Care provisions of the Environmental Protection Act 1990. This includes the requirement to describe the waste and record the quantity. You should use data generated in compliance with Duty of Care requirements to complete the PI return. The only additional information that is required in reporting off-site waste transfers to the PI is the appropriate Waste Framework Directive D&R code.

4.1. Relevant wastes

List of Waste (LoW) sub-chapter 03 03 contains the main codes that cover the majority of process wastes generated by paper mills: wastes from pulp, paper and cardboard production and processing.

LoW code	LoW description	Properties and examples
03 03 01	Waste bark and wood	Waste wood and bark from wood pulping only
03 03 02	Green liquor sludge	From Kraft pulping and N/A in UK
03 03 05 See note 1	De-inking sludges from paper re-cycling	De-inking sludges from paper recycling containing short and rejected fibres, fillers and including ink compounds and de-inking detergents/surfactants.
03 03 07	Mechanically separated rejects from pulping of waste paper and cardboard (post pulping)	Mechanically separated rejected materials or contraries from the pulping process of waste paper & cardboard and downstream screening of the resultant pulp. Containing some rejected fibres, plastics, glass, metal

		etc.
03 03 08	Wastes from sorting of paper and cardboard destined for recycling (pre-pulping)	Wastes from pre-sorting or separation of paper & cardboard prior to the pulping process and containing similar rejected materials or contraries to 07, but potentially more organic material and generally larger & drier than 07 materials. May come from an on site MRF.
03 03 09	Lime mud waste	Associated with Kraft pulping & N/A in UK
03 03 10 See note 1	Fibre rejects, fibre, filler and coating sludges from mechanical separation	Rejected or short fibres, fillers, coatings and sludges from mechanical separation, includes sludges from paper recycling activities where de-inking is not carried out. Fibres & sludges from mills without a secondary ETP.
03 03 11 See note 1	Sludges from on site effluent treatment, other than those mentioned in 03 03 10	Secondary effluent sludges from on site (aerobic or anaerobic) effluent treatment plants, other than those mentioned in 03 03 10. May contain a mixture of primary & secondary sludges.
03 03 99	Wastes not otherwise specified	Please do not use this code unless agreed with site Inspector.

Other LoW codes applicable to paper making activities:

19 12 01	Waste paper and cardboard from mechanical treatment of waste	Waste paper and cardboard shredded before being sent off site and including paper spoil or broke that is sent for shredding and animal bedding under a U8 exemption.
10 01 14* See note 5	Bottom ash, slag and boiler dust from co-incineration of paper sludge (PSA)	Containing dangerous substances. Use 10 01 15 only if it does not contain dangerous substances above the thresholds.
10 01 16* See note 5	Fly ash from co-incineration of paper sludge containing dangerous substances (PSA)	General expectation that fly ash containing APC residues will be classified as hazardous. Use 10 01 17 only if it does not contain dangerous substances above the thresholds.
19 01 11* See note 5	Bottom ash and slag from incineration of paper sludge (PSA)	Containing dangerous substances. Use 19 01 12 only if it does contain dangerous substances above the thresholds.

19 01 13* See note 5	Fly ash from incineration of paper sludge containing dangerous substances (PSA)	General expectation that fly ash containing APC residues will be classified as hazardous. Use 19 01 14 only if it does not contain dangerous substances above the thresholds.
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Waste operation	WFD code
Land spreading of sludge and fibre to land for agricultural benefit / ecological improvement or land restoration/reclamation or improvement on non-agricultural land. Under SR2010 No4 & No5 respectively	R10
Recycling/reclamation of organic substances such as sludges and fibres via composting or other biological transformation, for example, anaerobic digestion. Sludge and paper waste sent for animal bedding either directly or following off site treatment/drying.	R3
Incineration or co-incineration of paper sludge, where the activity is principally for the generation of energy.	R1* note 6
Incineration or co-incineration of paper sludge without energy recovery. See note 5.	D10
Wastes sent to landfill, WAC conforming hazardous wastes under D5, non-hazardous to D1.	D5/D1
Land treatment. Disposal of sludge to land where land is performing a treatment process to the sludge, rather than the sludge is conferring a benefit to the land. These situations are increasingly rare, check with your Inspector before using this code.	D2

Notes

1. Where paper sludges are 'mixed' on site prior to recovery or disposal, use the code which best describes the largest or most significant fraction. For instance, if primary sludges and fibres (03 03 10) are mixed with secondary ETP sludges (03 03 11), then code the mixed waste stream according to the largest fraction. However, where de-inking sludges (03 03 05) are mixed with primary and secondary ETP sludges, the resultant mix should all be coded as de-inking sludges to prevent de-inking sludges going for unsuitable recovery operations.
2. Only record wastes that are generated from the installation itself and not associated wastes from areas of the site that may not be within the installation boundary such as offices. The vast majority of wastes coded should be from the paper making and associated activities.
3. Do not code waste paper brought onto site for re-processing, other than that rejected and sent for further recovery/disposal off site. Wastes treated/ recovered/disposed of within the

permitted installation boundary need not be reported, for instance paper sludge which is sent to an on-site incinerator under the same permit. If waste is transferred off site to a separate permitted installation, operated by the same or a different Operator, then it should be reported.

4. You should not record broke sent on to another site for re-working as it is deemed a by-product and not a waste.
5. You must carry out a hazardous waste assessment of mirror entries (*) in accordance with WM2 hazardous waste guidance. See link: <http://www.environment-agency.gov.uk/business/topics/waste/32200.aspx>
6. To qualify for R1(recovery) status the incinerator must comply with the energy efficiency criterion set out on our guidance at <http://www.environment-agency.gov.uk/business/sectors/133340.aspx>

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