APPLICATION FOR AN ENVIRONMENTAL PERMIT UNDER THE ENVIRONMENTAL PERMITTING (ENGLAND AND WALES) REGULATIONS 2016 (AS AMENDED)

WOOD WASTE REVIEW

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ACRONYMS / TERMS USED IN THIS REPORT

EA	Environment Agency
ECL	Environmental Compliance Limited
E.coli	Escherichia coli
IED	Industrial Emissions Directive
LOD	Limit of Detection
NRW	Natural Resources Wales
PAS	Publicly Available Specification
Platts	Platts Agriculture Limited
PTE's	Potentially Toxic Elements
RPS	Regulatory Position Statement
WRA	Wood Recyclers' Association

1. INTRODUCTION

1.1. Review of Wood Waste and Analysis

1.1.1. As part of Platts Agriculture Limited ("Platts") application for a bespoke Environmental Permit for a waste wood processing Facility, Environmental Compliance Limited ("ECL") has been commissioned to review the wood waste sampling results generated since Platts started undertaking a targeted sampling regime.

1.1.2. The Environment Agency ("EA") Regulatory Position Statement 207 ("RPS"), that was in force, stipulated that unless wood waste producers had undertaken a WM3 assessment for their waste then the only disposal routes were to send the material to board manufacturing or send it to an Industrial Emissions Directive ("IED") compliant incinerator. This RPS has now been withdrawn and replaced with two new RPS released at the time when the Wood Recyclers' Association ("WRA") issued updated guidance in July 2021. A further update was issued in November 2021. The new RPS are RPS 249 and RPS 250, both dealing with sources of potentially hazardous waste wood.

1.1.3. Regulatory concerns have existed in respect of suspected inappropriate end use of certain wood wastes, lack of testing, and lack of appropriate waste coding using the WM3 Technical Guidance[1] to determine whether wood waste was hazardous or not.

1.1.4. In trying to work towards a regulatory compliant position, Platts requested that their suppliers had their wood wastes sampled and analysed in order that WM3 assessments could be undertaken and thereby classify the wood waste streams appropriately and determine whether the waste was hazardous or not. The assessments would provide the correct waste code which should be assigned to the waste streams.

1.1.5. Sample analysis suites of wood waste were developed after discussions with laboratories and covering as wide a range of likely substances that may be present in the wood wastes. The final suite of analysis was as recommended by the laboratories.

1.1.6. Results of analysis to date has been collated and assessed against PAS111 ("Publicly Available Specification"), as demonstration of which was requested in NRW's letter of 17th April 2020 (NRW Reference WIR 2000440). A further request to evidence against a recognised standard such as PAS111 was made by NRW in a letter dated 1st April 2021 (NRW Reference WIRS2000440).

1.1.7. Many of the substances analysed for are not detailed within the PAS111 document, however, Platts wanted to understand the range of substances present in the wood wastes they were receiving as this would help determine whether they were suitable for the intended use. Many substances that were analysed for were below the limit of detection ("LOD") for the majority of samples received to date.

[1] Guidance on the classification and assessment of waste (1st Edition v1.2GB) Technical Guidance WM3

2. Publicly Available Specification

2.1. PAS111:2012

2.1.1. The Publicly Available Specification document PAS111:2012 (BSI 2012) was developed for the wood waste industry sector (in collaboration with others, including the WRA) to provide advice and guidance on how to deal with wood waste and the methodologies to employ in order to develop appropriate end uses for different wood waste sources. The document specifically refers to animal bedding, which Platt's produce using the clean wood waste streams received, along with mulches and other ground coverings / equine use.

2.1.2. Additionally, Platts produce a cubicle conditioning agent which is applied to the bedding material, usually a rubber mat, which aids the maintaining of sanitary conditions within the cubicle providing health benefits to the animal within the cubicle. Platts want to ensure their conditioning agent meets the same, if not better, specification as that detailed within PAS111 for use as a bedding/conditioner specification.

2.1.3. The PAS111 document contains a table of suggested upper limits for chemical contamination of wood waste used in panel board manufacture, porous surface applications (excluding agriculture), and non-porous surface applications. Figure 1 below reproduces this table from the PAS111 document. The chemicals are described as potentially toxic elements' ("PTEs").

Figure 1: PAS111 Chemical Contamination Upper Limits

Table 1 – Chemical contamination – upper limits

Main contaminants in treated wood	Upper limit for each end use (mg/kg dry matter)		
	Panelboard manufacture [Source: WPIF & EPF Standards]	Porous surface applications (excluding agriculture) [Source: PAS 100]	Non-porous surface applications
PTEs			
Arsenic (As)	25	–	–
Cadmium (Cd)	50	1.5	1.5
Chromium (Cr)	25	100	100
Copper (Cu)	40	200	200
Fluorine (F)	100	–	–
Chlorine (Cl)	1,000	–	–
Lead (Pb)	90	200	200
Mercury (Hg)	25	1.0	1.0
Nickel (Ni)	–	50	50
Zinc (Zn)	–	400	400
Compounds			
Heavy metal compounds (e.g. CCA) and halogenated organic compounds (e.g. Lindane)	4,000 combined	Trace	Trace
Creosote (Benzoapyrene)	0.5	Trace	Trace
Pentachlorophenol (PCP)	5	–	–

2.1.4. Along with the substances detailed in Figure 1 above, the PAS111 also suggests biological analysis for Escherichia coli ("E. coli") and Salmonella spp. should be undertaken for wood wastes used for animal bedding, which is illustrated in Figure 2 below, as copied from the PAS111 document.

Figure 2: PAS111 Biological Testing

Table 2 – Biological testing – Test methods and upper limits

Parameter	Method of test	Unit	Upper limit
Escherichia coli	BS ISO 16649-2	CFU/g fresh mass	1,000
Salmonella spp	Schedule 2, Part II of BS EN ISO 6579	25 g fresh mass	Absent

3. REVIEW OF ANALYSIS DATA

3.1. Data

3.1.1. The results generated from wood waste samples sent for analysis in relation to undertaking WM3 assessment for the appropriate classification of the waste streams, along with those for quality control purposes, has been collated.

3.1.2. At the time of writing, there have been a total of 658 samples analysed, 629 of which were 'treated' wood waste (excluding any treatments relating to the pressure treatment of timber for preservation purposes), and 29 'clean' wood waste samples. The analysis undertaken related to the chemical substance composition and the concentrations of those substances present, as advised by the laboratories.

3.1.3. The results for all analytes assessed have been collated into a library of results and then this data has been subject to specific analysis for the purposes of this review.

3.2. Comparison to PAS111

3.2.1. Table 1 in the PAS111 document, detailed in Figure 1 above, has been used for the basis of comparison against the wood waste analysis sample results obtained to date. The specific substances and the associated concentrations on which the comparison is based are detailed in Table 2 below, along with the microbiological parameters.

3.2.2. Table 1 below splits the sampling up between the various suppliers for the treated wood waste and identifying the number of samples collected and analysed for each supplier. The number of samples by supplier varies to reflect the volumes of wood waste received from the various suppliers. Those with much larger numbers of samples are the biggest suppliers in terms of volume.

3.2.3. It should be remembered that the PAS111 standard refers to animal bedding and the treated wood waste is not used for animal bedding, it is only used for the conditioning agent which amounts to a recommended cup full to be placed at the rear of the cubicle on top of the bedding material (usually rubber matting) up to twice a day.

Table 1: Results Summary

Supplier ID	No. of Samples	Supplier ID	No. of Samples
A	10	AA	1
B	59	AB	1
C	54	AC	2
D	40	AD	17
E	104	AE	3
F	53	AF	3
G	58	AH	2
H	38	AJ	2
I	42	AK	1
J	30	AL	1
K	5	AM	1
L	11	AN	1

Table 1: Results Summary (Cont.)

Supplier ID	No. of Samples	Supplier ID	No. of Samples
M	3	AO	1
N	3	AP	2
O	14	AQ	1
P	10	AS	1
Q	8	AT	1
R	6	AU	1
S	1	AW	1
T	3	AV	1
U	1	AX	1
V	6	-	-
W	2	-	-
X	10	-	-
Y	7	-	-
Z	5	-	-

Table 2: Comparison to PAS111

PTEs	Units	Panel board Manufacture	Porous Surfaces	Non-porous Surfaces	Average Treated Library Results	Average Clean Library Results
Arsenic	mg/kg	25	-	-	**6.2**	**1.6**
Cadmium	mg/kg	50	1.5	1.5	**0.2**	**0.5**
Chromium	mg/kg	25	100	100	**14.1**	**5.9**
Copper	mg/kg	40	200	200	**41.1**	**12.6**
Fluorine[#]	mg/kg	100	-	-	-	-
Chlorine[#]	mg/kg	1,000	-	-	-	-
Lead	mg/kg	90	200	200	**35.0**	**5.6**
Mercury	mg/kg	25	1.0	1.0	**0.5**	**0.6**
Nickel	mg/kg	-	50	50	**5.1**	**4.3**
Zinc	mg/kg	-	400	400	**50.4**	**25.5**
Compounds						
Heavy metal compounds (e.g. CCA) and halogenated organic compounds (e.g. Lindane)	mg/kg	4,000 combined	Trace	Trace	**	**
Creosote (Benzoapyrene)	mg/kg	0.5	Trace	Trace	**<LOD**	<LOD
Pentachlorophenol (PCP)[#]	mg/kg	5	-	-	-	-
Pathogen	Units	Animal Bedding upper Limit				
E. Coli	CFU/g fresh mass	1000			-[#]	< 10.0
Salmonella spp.	25g fresh mass	Absent			-[#]	None detected

Notes to table:
[#] Not analysed
**No samples contained CCA or halogenated organic compounds from pressure treatment

3.2.4. The average results shown in Table 2 illustrate that for both treated and clean wood waste, the results are significantly below the suggested upper limits presented in PAS111. Therefore, it is concluded that the wood waste materials received by Platts are suitable for the end use they are destined and that they comply with the PAS111 standard. As such, they should be considered as a product and no longer a waste.

3.2.5. It should be noted that biological testing was not undertaken on the treated wood waste, but clean wood waste samples have been tested for biological contamination. No salmonella has been detected in any sample and all E. coli results have been less than 10 CFU, compared to an upper limit of 1000 CFU. Therefore, it is considered that all of the clean wood waste samples analysed have been deemed compliant with PAS111 for use as animal bedding material.

4. SUMMARY

4.1. Suitability of Materials

4.1.1. The results of analysis of a significant number of wood waste samples, from both treated and clean sources, has revealed that the wood waste streams received by Platts meet the PAS111 standard required for the supply of animal bedding materials.

4.1.2. The PAS111 document was produced as a collaborative effort with involvement from the national regulators. The wood waste industry sector has been using the document and recommendations from it for the supply of processed wood wastes for various end uses. Platts have gone to extensive efforts to ensure they only take wood waste supplies from pre-consumer manufacturing sites and sourcing such that the material they receive has minimal contamination.

4.1.3. Platts are using on-going sampling and analysis to ensure their wood waste supplies remain fit for purpose and such that they can process materials with confidence and be certain that animal health, human health and the environment will not suffer detriment from the products produced through their process.

4.1.4. Compliance with the PAS111 standard should mean that Platts are not considered as passing on waste materials but have in fact met the necessary regulatory requirements for meeting the end of waste criteria for their products.