Client: Covanta

Report Date: 4th March 2020 Contract No: 16877-5

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WRc response to EPA request for additional information - DWtE classification of IBA

1. Introduction

WRc have produced a characterisation and classification report on behalf of Covanta to inform the hazard assessment of IBA produced at the Dublin Waste to Energy (DWtE) facility. A WRc report UC14111.2 was submitted to the EPA in November 2019. The EPA have raised a request for some additional information relating to a number of aspects in the report.

The report has been amended in light of these points and will be resubmitted as UC14111.3. This document is intended to provide a response to the questions raised by the EPA and help guide the reader through the revised report.

2. Questions raised by EPA

2.1 Consistency of reference to sample number

Question 1: The report has been amended to clarify in all references that 8 samples of IBA have been characterised at WRc.

The 8 samples were sent in two batches; one batch of four samples taken in November and December 2018 and a further batch of four samples taken in July and August 2019.

An overview of the number of samples sent for specific tests is shown in section 4.2 page 15.

Table 4.1 has been included on page 16 to provide information regarding sampling. All sampling record sheets and sample results are provided in Appendix B.

2.2 Comparison of DWtE IBA with UK IBA dataset

Question 2: The eight IBA DWtE samples tested at WRc have been compared with WRc's in-house dataset consisting of over 3,000 UK IBA samples.

Figures 5.3 to 5.5 on page 28 and 29 show this comparison. The eight DWtE samples (red dots) are plotted against the total WRc dataset (box and whisker plots) to show their similarity.

Question 3: The DWtE dataset which has been generated at WRc consists of eight samples. This dataset has been bolstered by selecting a random number of additional samples from WRc's larger in-house dataset. This demonstrates that the characteristics of the DWtE samples are consistent with UK produced IBA and that further sampling would not have likely produced samples which did not display these characteristics. Therefore, even though the dataset does not conform with the initial sampling plan, further sampling would not be considered necessary to inform a hazard assessment.

This explanation is provided in Section 10 on page 67.

2.3 Section 11

Question 4

- The % compound which was calculated is based on an average of all 8 data points generated from the IBA samples. For HP14 each IBA sample has been assessed individually.

- The minerals determined in the XRD/XRF analysis have now been included in the hazard assessment. Cristobalite has been included in HP5 assessment and various other compounds have been highlighted as having hazard statement codes associated with HP4. It is stated in the text that the accuracy of quantitative XRD is reliable at phase concentrations >5 w%. Therefore, in the case of HP4 assessment the use of *in-vitro* testing is more appropriate for such a complex material.

- All compounds listed as worst case have now been included in section 12. Previously those which were considered to be present at concentrations well below cut off values

or threshold limits were not included. However, they have been included for consistency.

- All compounds are assessed for the relevant hazard properties. In the original table some compounds which had hazard statement codes relevant to different hazard properties were assessed against the hazard property with the most stringent threshold value. However, the revised table 12.2 on pages 87 and 88 includes all relevant hazard properties.

- Zinc hydroxide is considered the worst case compound for this IBA and the IBA assessed using this compound. The table has been amended to remove any errors. The zinc hydroxide concentration is calculated based on the characterisation work presented in the preceding chapters of the report.

- The HP14 assessment has been performed on each IBA sample individually. The concentration of copper and zinc hydroxide has been determined based on the characterisation work presented in the preceding chapters. The total concentration of copper and zinc has been adjusted to account only for the % of copper hydroxide and zinc hydroxide which was found to be present in the material.

- All HP14 assessment figures have been changed to %.

All amendments to the report have been made as per the Environmental Protection Agency's request and revised calculations made where necessary which has no effect on the concluding statement that the IBA from the Dublin facility should be classified as Non Hazardous with the EWC code 19 01 12.