

Caulmert Limited

Engineering, Environmental & Planning
Consultancy Services

Knottingley Waste to Resource Facility

FCC Recycling (UK) Limited

Environmental Permit Variation Application

H1 Air Emissions Risk Assessment

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H1 Air Emissions Risk Assessment

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Appendix 2	Blackburn Meadows. Monitoring to determine occupational exposures. Report reference 250906, date of testing : 15th – 19th September 2025
Appendix 3	H1 assessment input data sheets (air release points and emissions inventory) and the output table (air tests)

1.0 INTRODUCTION

1.1 Background

- 1.1.1 FCC Recycling (UK) Limited (a wholly owned subsidiary of FCC Environment (UK) Limited) (FCC) has appointed Caulmert Limited to prepare a bespoke environmental permit variation application to vary the existing permit (ref. EPR/JP3547JL) to allow several additional activities at Knottingley Waste to Resource Facility (hereafter referred to as 'the Site').
- 1.1.2 The purpose of this variation is to conduct a comprehensive revaluation and optimisation of the Site's operational activities, primarily to refine existing processes while introducing activities to enhance waste management and treatment on site.

1.2 H1 Air Emissions Risk Assessment

- 1.2.1 The H1 Air Emissions Risk Assessment (AERA) methodology has been developed in accordance with the Environmental Permitting (England and Wales) Regulations 2016 and the EU Industrial Emissions Directive (2010/75/EU). The Environment Agency's H1 guidance¹ and screening tool are used to assess emissions to air by comparing predicted concentrations against relevant environmental standards. This process enables the identification of emissions that are environmentally insignificant and those that may require further detailed assessment.
- 1.2.2 Input data for this assessment have been obtained from a variety of sources, including monitoring data from other FCC facilities undertaking similar activities, published literature, and site-specific information provided by FCC for the Knottingley facility. This includes emission rates, stack parameters (such as height) and operational characteristics.
- 1.2.3 The H1 screening tool is used to identify substances that are likely to have an insignificant environmental impact, allowing them to be "screened out" at an initial (first) stage. For substances that cannot be screened out in the first stage, a subsequent screening (second stage) of the Predicted Environmental Concentrations (PECs) are calculated by combining the process contribution (PC) with existing background concentrations, then compared against Environmental Assessment Levels (EALs) to determine whether detailed dispersion modelling or mitigation measures are required.

1.3 Site Setting and Location

- 1.3.1 The Site is located in Knottingley, West Yorkshire, WF11 8DZ. It is centred on National Grid Reference SE 51279 23861. The main site entrance is accessed from Weeland Road on the southern boundary.
- 1.3.2 The site is within a semi-rural and residential location. The residential areas of Knottingley are primarily situated southwest of the site. The closest residential areas to the site are located

¹ [Air emissions risk assessment for your environmental permit - GOV.UK](#)

along Weeland Road, The Croft, Springfields Avenue, and Broomhill Avenue. Fernley Green Industrial Estate is located in an area to the west of the site boundary and extends northwest.

1.3.3 There are no National Nature Reserves (NNR), Ramsar Sites, Special Areas of Conservation (SAC) or Special Protection Areas (SPA) within 5km of the Site. The Fairburn and Newton Ings Site of Special Scientific Interest (SSSI) is located approximately 5km north west of the Site.

1.3.4 Willow Garth Nature Reserve is located to the north east of the Site. Although this is known as a wildlife/nature reserve managed locally (e.g. by Yorkshire Wildlife Trust), it is a non-statutory locally important wildlife site and is not designated as a Local Nature Reserve (LNR). The nature reserve is not recorded in the designated habitats on the Multi-Agency Geographic Information for the Countryside (MAGIC) database.

1.4 Reliability of Information

1.4.1 This report has been compiled from a number of sources. Caulmert is unable to guarantee the accuracy of information provided by others. The report is based on information available at the time of preparing the report and consequently, there is a potential for further information to become available, which may change the conclusions in the report and for which Caulmert cannot be responsible.

2.0 EMISSION CONTROL EQUIPMENT AT THE FCC KNOTTINGLEY WASTE TO RESOURCE FACILITY

2.1 Introduction

- 2.1.1 The use of the Best Available Techniques (BAT) approach requires the identification of potential emissions to air and, where appropriate and practicable, their control. The BAT Reference Document for Waste Treatment (2018) highlights the best available techniques for such control, based upon the activities undertaken. This information, together with equipment selection and performance information from suppliers, knowledge of the waste treatment processes to be employed at the site, and of existing experience, has informed the selection of appropriate emissions control techniques to be employed at the facility.
- 2.1.2 All buildings where waste processing occurs are designed to operate as far as reasonably practicable as enclosed, with air being extracted through an appropriate or precautionary emission control systems. The operation of the building, extraction and emission control system will be such as to maximise their ability to control emissions and complement waste pre-acceptance, acceptance and operational measures to minimise emissions to air.
- 2.1.3 Where activated carbon is chosen as the primary emission control (treatment) technique, the carbon grade for each individual application will be selected, with advice from the supplier, to be the most suited for the range of substances required to be removed. Where practicable, carbon will be removed for regeneration once spent, as opposed to appropriate disposal.
- 2.1.4 The choice of wet scrubber configuration and associated operating conditions for each individual application will be selected, with advice from the supplier, to be the most suited for the range of substances required to be removed (for example acids and bases).
- 2.1.5 The choice of fabric filtration unit, filter media and its operating conditions for each individual application will be selected, with advice from the supplier, to be that most suited to the application.
- 2.1.6 Where wastes are stored in buildings in an unpackaged form, emission control equipment will be operated continuously. During times of maintenance or equipment failure, the stocks of waste will be minimised.
- 2.1.7 Where emission control is required for process tanks or vessels or waste treatment activities being undertaken within a building, the emission control system will be in operation. During times of maintenance or equipment failure, waste processing operations will cease.
- 2.1.8 Equipment will be maintained and operated in line with good practice, with appropriate monitoring and routine maintenance undertaken as applicable.
- 2.1.9 Compliance with the BAT Reference Document and the Appropriate Measures document has been highlighted in the appropriate documents of this permit variation application.

2.2 Control of organic emissions

Waste Processing 01

- 2.2.1 Air emissions from this building (P01-ZP-01) will contain organic substances at low concentrations arising from bulking operations from small to larger containers comprising organic solvents (e.g. methanol) and the shredding of retail containers and contaminated packaging. These activities are undertaken within hooded areas where air is extracted to minimise the occupational health risk to employees and visitors. The extracted air will be cleaned within an activated carbon filter, which is highlighted within the BAT reference document and known in practice to be the most suitable technique for such emission control with an efficiency of removal which exceeds 90%.
- 2.2.2 The building is fitted with doors, and the extraction of air maintains the building under negative pressure when in use.
- 2.2.3 No processing vessels or storage tanks are associated with this activity.

Waste Processing 02

- 2.2.4 Air emissions from this building (P02-ZP-01) may contain organic vapours at very low concentrations arising from bulking operations from small to larger containers involving non-volatile organic or organic substances containing wastes (e.g., water-based paints and detergents) and the shredding of retail containers and contaminated packaging. Inorganic wastes with very low risk of emissions are also processed in this area and exclude those that may generate gaseous emissions (e.g., strong acids), for which an alternative process area is provided. Wastes may be processed anywhere, within the building this coupled with the low risk of emissions of organic substances, has resulted in the selection of activated carbon filtration as the suitable means of emission control, as highlighted in the BAT Reference Document as the most practicable technique. Efficiency of removal exceeds 90% and is the most efficient technique available for this application.
- 2.2.5 No processing vessels or storage tanks are associated with this activity.

Waste Processing 03

- 2.2.6 Air emissions from this building (P03-ZP-01) may contain dusts and organic vapours at very low concentrations from shredding and storage operations associated with non-hazardous wastes such as contaminated water-based paint containers. Wastes processed are not putrescible, and residence time within the building is limited to a maximum of 7 days.
- 2.2.7 Two complementary emission control systems are used. A recirculation system employing fabric dust filtration and carbon filtration, which acts to clean air and return it to the building and an air extraction system to remove potential nuisance odours or organic substances prior to emission to air via the emission point. The latter provides negative pressure within the building as a whole, the former allows extraction of air from specific process areas and allows air to be recirculated.

- 2.2.8 Fabric filtration for dusts is identified as a best practicable technique within the BAT reference document and is expected to achieve >95% removal of particulates. The use of activated carbon to control the emission of organic substances at low levels is highlighted in the BAT reference document as the best practicable technique. Efficiency of removal exceeds 90%. Both fabric filtration and activated carbon adsorption are the most efficient techniques available for this application.
- 2.2.9 The building is fitted with doors, and the extraction of air maintains the building under negative pressure, this is maintained 24hours, 7 days each week (24/7) due to the presence of unpackaged wastes.
- 2.2.10 No processing vessels or storage tanks are associated with this activity.

2.3 Control of inorganic emissions

Waste Processing 04

- 2.3.1 These activities include a building (P04-ZP-01) and an associated tank farm with mixing vessels with wastes being processed, limited to inorganic solutions or solids with negligible volatile organic composition. Emission control is therefore to manage the potential presence of acid or alkaline inorganic gases, specifically hydrogen chloride, sulphur dioxide and ammonia, which may result from storage or processing activities of wastes or reagents containing these dissolved gases.
- 2.3.2 The use of appropriate wet scrubbing techniques is highlighted in the BAT reference document as the best practicable and most efficient means of treating air emissions arising from inorganic acid or alkaline gases. Two such scrubbing systems are to be provided, one suited for acid and one suited for alkaline gases, for the tank farm and mixing vessels. Scrubbing for acid gases will be by use of a sodium hydroxide solution, and for alkaline gases by a sulfuric acid solution, with monitoring of these reagents being undertaken to ensure neutralising capacity is available.
- 2.3.3 All storage tanks and mixing vessels will be connected to an appropriate scrubber based upon their contents, and negative pressure will be maintained 24/7 while substances are present in the associated tank or vessel.
- 2.3.4 A building is used for the final filtration, processing and storage of recovered products. There is negligible risk of emissions from these activities, although the building will be maintained under negative pressure and activated carbon filtration used to clean the removed air as a precautionary measure.

Waste Processing 05

- 2.3.5 These activities are undertaken in a building (P05-ZP-01) which houses a drying unit for inorganic solid wastes. The unit is enclosed, and the presence of volatile organic materials will be negligible, however, the warming of wastes may result in some gases. The building will

therefore be maintained under negative pressure, with activated carbon being used to clean the air removed as a precautionary measure.

Waste Processing 06

- 2.3.6 These activities are spread across three buildings, each with an associated tank farm with mixing vessels present within the buildings and within the tank bunds. Tank storage is provided for liquid and solid (powder) wastes and reagents. Waste processing is limited to solid and liquids with limited inorganic solutions or solids with negligible volatile organic composition. Emission control is therefore to manage the potential presence of acidic inorganic gases, specifically hydrogen chloride and sulphur dioxide, from vessels containing liquids and dusts from vessels holding powder wastes or reagents
- 2.3.7 Buildings P06-ZP-11 and ZP-21 are concerned with dealing with aqueous and solid inorganic wastes, which may be acidic or alkaline and require reagents such as calcium hydroxide or sulfuric acid. Wastes and reagents may be bulk powders or liquids or packaged solids and liquids. Wet scrubbing utilising sodium hydroxide as a reagent is provided for storage vessels, reaction and mixing vessels.
- 2.3.8 The buildings are provided with an activated carbon filter to deal with what will be negligible emissions from the processing and storage activities in these buildings, and will allow the buildings to be kept under negative pressure.
- 2.3.9 Building P06-ZP-31 is concerned with the processing of Air Pollution Control (APCr) derived wastes from Energy from Waste facilities, cement kilns and similar, by washing and filtering or conditioning. The potential for emissions to the atmosphere is considered negligible as the mixing of APCRs with reagents is undertaken within enclosed equipment within a building. The building is provided with an activated carbon filter to deal with what will be negligible emissions from the processing and storage activities in the building, and will allow the building to be kept under negative pressure.
- 2.3.10 Within the associated tank farm, storage vessels or mixing vessels holding liquids, except for reagent inorganic acids, are not extracted as the potential for emissions to atmosphere are negligible. The wastes concerned are aqueous solutions of calcium hydroxide or sodium carbonate-based powders with negligible organic or other volatile components. Reagent acid storage tanks are extracted and scrubbed by a sodium hydroxide scrubber shared with the adjacent building (P06-ZP-21).
- 2.3.11 Tank storage for powders is equipped with self-cleaning fabric filters with captured dusts returned to the storage tank or removed. Fabric filters are identified within the BAT Reference Document as the best practicable technique for this application.
- 2.3.12 The use of wet scrubbing techniques with appropriate reagents is highlighted in the BAT Reference Document as the best practicable and most efficient means of dealing with air emissions of inorganic acid gases.

2.4 Control of inorganic and organic emissions

Waste Processing 07

2.4.1 Waste processing activity 07 is associated primarily with the treatment of landfill leachates to recover ammonia and return clean water to productive use in the environment. There are three distinct processing activities:

- Membrane filtration, reverse osmosis and ultrafiltration with the potential for nanofiltration, all of which are undertaken in a building (PO7-ZP-01), the equipment is sealed with no open vessels;
- Ammonia stripping and scrubbing, and associated storage of the recovered aqueous ammonia solution; and
- Biological treatment of landfill leachate and similar biodegradable wastes, where practical, waste substituting for reagents.

2.4.2 Leachate received at the facility will be from predominantly closed landfills where stabilisation of the organic content has occurred. Leachate from open landfills may be received and will be partially or fully stabilised from closed cells and not operational areas. Stabilised leachate has a very low presence of volatile organic substances although contains soluble ammonia. The emission control rationale is therefore as follows:

- Membrane filtration units are housed within a building kept under negative pressure using an activated carbon filtration system to deal with fugitive odours should they occur. The selection of activated carbon filtration as the means of emission control is highlighted in the BAT Reference Document as the most practicable technique for such emissions. Efficiency of removal exceeds 90% and is the most efficient technique available for this duty.
- The ammonia stripping and scrubbing unit is a sealed process except for a minimal air bleed and the storage tank for the recovered product. The air bleed may be a source of odour from the concentrate leachate being processed, so it is equipped with an activated carbon filter. The ammonia storage tank is equipped with a wet scrubber unit utilising a sulfuric acid solution to treat displaced air.
- The biological treatment activity consists of a number of tanks where aerobic and anoxic conditions are maintained to sustain a microorganism population by aeration or not, as appropriate, and the provision of appropriate nutrients, principally within the waste being treated. All tanks are enclosed with venting to remove displaced air (from aerated tanks) or as overfill protection. Operation of similar plants, including BAT compliant facilities, indicates no further emission controls are required.

3.0 SUBSTANCES USED IN THE H1 ASSESSMENT

3.1 Introduction

3.1.1 The air emission treatment systems have not as yet been finalised at Knottingley, and there are no site specific air emission monitoring data to apply to the H1 assessment. However, the proposed treatment facilities at the Knottingley site will treat similar substances to those monitored from treatment processes carried out at other FCC facilities.

3.2 Air emission substances at Knottingley

3.2.1 The air emissions substances that are likely to be generated from the waste treatment processes at Knottingley are primarily volatile organic compounds (VOC), ammonia, sulphur dioxide and hydrogen chloride. The wastes that are managed at the facility will comprise of a mixture of VOC which is understood will mostly comprise primarily monoaromatics (e.g. benzene, toluene, ethylbenzene, xylene), ketones (e.g. acetone – dimethyl ketone, methyl-ethyl ketone - MEK, methyl propyl ketone), alcohols (e.g. methanol, isopropanol - propan-2-ol), white spirit and paints (carbon groups C7 heptane to C12 dodecane, and toluene, ethylbenzene, xylene). There may also be occasionally chlorinated solvents (e.g. dichloromethane, tetrachloroethylene, trichloroethylene) in some of the wastes.

3.3 Air emissions data at Blackburn Meadows

3.3.1 FCC operate a waste treatment facility at Blackburn Meadows Alsing Road, Tinsley, Sheffield, S9 1HL (Permit reference EPR/MP3131SA). The facility uses various physico chemical methods to treat aqueous liquid wastes, solid and powder wastes. The wastes accepted include hazardous and non- hazardous. There are three emission points to air serving the treatment operations that are equipped with wet scrubbers. The facility treats similar waste streams that will be subject to treatment at Knottingley.

3.3.2 SOCOTEC UK LTD were commissioned by FCC to carry out stack emissions monitoring to record pollutants arising from the facility under routine operating conditions. A Stack Emissions Monitoring Report (SEMP) dated February 2026, reference LNO 19824 / Version 1, was provided for review and a copy is presented at Appendix 1. The air emissions at Blackburn Meadows recorded a Total VOC of 1.8mg/m³. The analytical results do not speciate the VOC, and therefore this concentration represents the combined concentration of VOC that may be present in the emissions.

3.3.3 In addition to the air emissions monitoring at Blackburn Meadows, occupational health monitoring was carried out by Dukeries Environmental Testing (DET) to assess the potential exposure of site workers to VOC in accordance with the Control of Substances Hazardous to Health Regulations (COSHH). Although the results do not represent air quality emissions data (from stack monitoring), it is considered that the concentrations recorded are representative of the VOC that are present in the workplace environment, arising directly from the liquid wastes and which are vented and treated prior to air emissions. A copy of the occupational health monitoring is presented at Appendix 2.

- 3.3.4 The occupational health monitoring recorded concentrations of VOC on five occasions between 15 and 19 September 2025 at three locations (a total of 15 datasets). The locations were within the operational yard processing waste chemicals on site, and within the laboratory. The concentrations of VOC monitored and tested are presented as the maximum, mean and minimum values in Table 1.

Table 1: Maximum, mean and minimum VOC concentrations recorded at Blackburn Meadows

Volatile Organic Compound (VOC)	Maximum concentration of the substance recorded (mg/m ³)	Mean concentration of the substance recorded (mg/m ³)	Minimum concentration of the substance recorded (or MDL) (mg/m ³)
Benzene	0.0072	0.007	0.0064 ¹
Butyl acetate	0.5	0.12	0.016
Diethyl ether	0.066 ¹	0.065 ¹	0.06 ¹
Ethylbenzene ²	0.37	0.112	0.0068
Propan-2-ol	0.34	0.101	0.011
Tetrachloroethylene	0.053	0.021	0.013 ¹
Toluene	0.32	0.102	0.0064
Trichloroethylene ³	0.013 ¹	0.013 ¹	0.013 ¹
Xylene ⁴	1.5	0.359	0.026
Mean – excludes the outliers (see below)			
1 - concentration of the analytical method detection limit			
2 – Ethylbenzene was recorded on one occasion at 7.3mg/m ³ (considered to be an outlier)			
3 - Trichloroethylene was recorded on one occasion at 0.31mg/m ³ (considered to be an outlier)			
4 – Xylene was recorded on one occasion at 28mg/m ³ (considered to be an outlier)			
For these substances which recorded a outlier, the second highest concentration are presented in the table.			

- 3.3.5 Butyl acetate, ethylbenzene, propan-2-ol, toluene and xylene were recorded above the analytical method detection limit in all or most of the datasets. Diethyl ether was not recorded above the analytical method detection limit (<0.066mg/m³). Tetrachloroethylene was recorded above analytical method detection limit (<0.013mg/m³) in four datasets, benzene was recorded above analytical method detection limit (<0.0066mg/m³) in two datasets and trichloroethylene was recorded above analytical method detection limit (<0.013mg/m³) in one dataset.
- 3.3.6 The substances recorded in the occupational health monitoring data comprises similar groups of organic substances which are handled at the Knottingley Site and therefore this data has been used in the H1 assessment.

4.0 DATA USED IN THE H1 ASSESSMENT

4.1 Waste processing area, the efflux velocity and total flow

4.1.1 There are twelve (12) air emissions points from seven (7) waste processing areas at the Knottingley facility. The height of the vent stacks vary between 9.65m above ground level to 18.15m above ground level, although vents are positioned approximately 2m above each of the buildings. Therefore, for the H1 assessment, a value of 0m is applied. The efflux velocities and total flows have been determined by FCC based on calculations for venting these areas to displace the area and sizing air volumes.

4.1.2 The data for the efflux velocities and air flows applied in the H1 assessment are presented in Table 2. Conservatism is inherent regarding operational time (mainly at 100%), which does not account of down-time, maintenance or other stoppages annually.

Table 2: Air emissions points and the efflux velocities, air flows and operational time used in the H1 assessment

Waste Processing Area	Emission point to air	Grid reference	Height of vent/stack (m)	Efflux velocity (m/sec)	Total flow (m ³ /hr)	Substances treated	Percentage (%) of operational time
WP01	EP01	SE 51202 23827	18.15	2657	18600	Xylenes	60
	EP09	SE 51193 23826	18.15	2657	18600	Xylenes	60
WP02	EP02	SE 51155 23906	9.65	2657	18600	Total VOC	60
WP03	EP03	SE 51074 23822	18.15	2657	18600	Total VOC particulates	100
WP04	EP04	SE 51301 23757	11.15	2657	18600	Total VOC	100
	EP13	SE 51355 23764	11.15	12	1000	HCl, sulphur dioxide	100
	EP14	SE 51349 23764	11.15	12	1000	Ammonia	100
WP05	EP05	SE 51234 23838	18.15	2657	18600	Total VOC	100
WP06	EP06	SE 51292 23832	9.65	12	1000	HCl, sulphur dioxide, particulates	100
	EP10	SE 51292 23853	9.65	2657	18600	Total VOC	100
	EP11	SE 51314 23832	9.65	2657	18600	Total VOC	100
WP07	EP07	SE 51326 23924	16.0	12	60	Ammonia	100

4.2 Long-term and short-term concentrations of the VOC substances used in the H1 assessment

- 4.2.1 The treatment systems at Knottingley are proposed, and there are no site specific emission monitoring data. Assuming that the proposed air emissions treatment system used at Knottingley has a similar effectiveness to the treatment applied at Blackburn Meadows, the Total VOC emissions recorded post treatment at Blackburn Meadows was 1.8mg/m³.
- 4.2.2 For the purpose of this H1 assessment, the workplace occupational health monitoring data of the concentrations of VOC recorded at Blackburn Meadows have been used in the H1 assessment. The long term concentration used in the H1 assessment are the minimum occupational health monitoring data concentrations recorded, or where these are recorded as not detected, the analytical detection limit is used for the long term concentration. The concentrations for the short term, are the mean concentrations of the occupational health monitoring data, with the exception of excluding the single outliers recorded for ethylbenzene, xylene and trichloroethylene. Trichloroethylene was recorded in only one dataset out of 15 above the analytical method detection limit, and the concentration is considered to be an outlier. Therefore, for the purpose of this assessment, a value equal to the analytical method detection limit (<0.013mg/m³) is used for both the long- and short-term concentration in the H1 assessment.
- 4.2.3 The VOC substances used in the assessment are taken from organic groups comprising monoaromatics, chlorinated solvents, ketones and alcohols. Although the monitoring data at Blackburn Meadows included diethyl ether, this was not detected in the analytical data. Also butyl acetate (ester), is not included in the H1 assessment model settings and therefore not included in this assessment. The other VOC recorded in the workplace monitoring at Blackburn Meadows have been applied in the H1 assessment, together with selected ketones and alcohols. However, there are no analytical monitoring data for ketones and alcohols and therefore the concentrations used in the assessment has assumed as surrogate values at similar concentrations to the other VOC that were recorded. The long term and short-term concentrations of the VOC substances used in the H1 assessment are presented in Table 3.

Table 3: The long- and short-term concentrations of the VOC substances used in the H1 assessment

Volatile Organic Compound (VOC)	Long-term concentration (mg/m ³)	Short-term concentration (mg/m ³) ¹
Benzene	0.0064 ²	0.0071
Toluene	0.0064	0.102
Ethylbenzene	0.0068	0.112
Xylene, o-, m-, p- or mixed isomers	0.026	0.359
Tetrachloroethylene	0.013 ²	0.021
Trichloroethylene	0.013 ²	0.013 ²
Methylene chloride (dichloromethane)	0.013 ³	0.02 ³
Acetone	0.006 ³	0.1 ³
Methyl ethyl ketone (MEK, 2-Butanone)	0.006 ³	0.1 ³
Methanol	0.01 ³	0.1 ³
2-propanol	0.011	0.101
1 – mean concentration recorded (where available)		
2 - analytical detection limit		
3 – no data - assumed concentration of other similar VOC		

4.3 Hydrogen chloride, sulphur dioxide and ammonia

4.3.1 In the absence of suitable monitoring data available for hydrogen chloride (HCl), sulphur dioxide (SO₂) and ammonia (NH₃), a conservative estimation of potential airborne concentrations of hydrogen chloride, sulphur dioxide, and ammonia has been undertaken. The approach applies to following:

- Effective Henry's Law constants (k_H), accounting for aqueous speciation
- Ideal gas Law
- Mass transfer limitations (k_L^a)
- Ventilation (air changes per hour, ACH)
- Process configuration (closed versus open systems)
- Abatement via scrubbing

4.3.2 This approach is consistent with applying conservative screening-level methodologies used in H1 assessment.

4.3.3 The equilibrium gas-phase concentration is derived from:

$$C_{aq} = k_H \times P$$

Where:

C_{aq} = dissolved concentration in the liquid (mol/L)

k_H = Henry's Law constant (mol/L atm) (dependent of the temperature and the specific gas-liquid pair)

P = gas partial pressure above the liquid (atm)

Gas pressure:

$$P = C_{aq} / k_H$$

Ideal gas law:

$$C_{gas} = \frac{P}{RT}$$

Where:

C_{gas} = gas concentration in mol/m³

R = gas constant

T = temperature in K (298.15k at standard Conditions)

For reporting in air:

$$C_{mg/m^3} = \frac{\text{ppm} \times \text{Molecular Weight (MW)}}{24.45}$$

Where 24.45 is the molar volume at standard temperature and pressure (STP).

4.3.4 It is understood that the processing of HCl will generate an aqueous solution comprising 20% HCl in water (hydrochloric acid). HCl is highly soluble and fully dissociated in water, and almost

all HCl exists as ions ($\text{HCl} \rightarrow \text{H}^+ + \text{Cl}^-$), and the vapour pressure of HCl above an aqueous solution will be very low. Consequently, the concentration of molecular HCl available for volatilisation is extremely low. The effective Henry's constant (k_H) is significantly reduced relative to physical solubility. Typical literature values indicate $k_H \approx 10^{-6}$ to $10^{-4} \text{ atm}\cdot\text{m}^3/\text{mol}$ (effective, accounting for dissociation), which would support equilibrium gas-phase concentrations typically in the range $\sim 1\text{--}10 \text{ ppm}$ ($1.5 - 15\text{mg}/\text{m}^3$).

- 4.3.5 Sulphur dioxide is also highly soluble; the equilibrium gas concentration is suppressed. In aqueous solution, forming sulphurous acid (H_2SO_3) and bisulphite ions (HSO_3^-), $\text{SO}_2 + \text{H}_2\text{O} \rightleftharpoons \text{H}_2\text{SO}_3 \rightleftharpoons \text{H}^+ + \text{HSO}_3^-$. The effective Henry's constant is strongly pH-dependent:

$$kH = H \cdot \left(1 + \frac{K_1}{[\text{H}^+]} + \frac{K_1 K_2}{[\text{H}^+]^2} \right)$$

Where:

- K_1, K_2 = dissociation constants of sulphurous acid

- 4.3.6 Therefore, at low pH (acidic conditions) SO_2 remains molecular, and there is a higher volatility, although at neutral to alkaline pH the bisulphite/sulphite dominate, and there is a much lower volatility. In strongly acidic conditions (worst case), the equilibrium gas-phase concentrations typically are determined to be between 100-500ppm, although for mildly acidic (buffered) conditions, the concentrations are determined to be between 10-100ppm ($26\text{--}260\text{mg}/\text{m}^3$).
- 4.3.7 The processing of ammonia will generate an aqueous solution comprising 22% of ammonia in water. Ammonia is highly volatile and partially ionized in equilibrium ($\text{NH}_3 + \text{H}_2\text{O} \rightleftharpoons \text{NH}_4^+ + \text{OH}^-$). The volatility is strongly pH-dependent, and high emissions only occur under alkaline conditions. Assuming literature range of partial pressures (P_i) $\approx 0.05\text{--}0.15\text{atm}$, for a mid-range P_i value, this would equate to a concentration in equilibrium between $\approx 50,000\text{ppm}$ – $150,000\text{ppm}$, which is approximately in the range of between $13,100\text{mg}/\text{m}^3$ – $39,300\text{mg}/\text{m}^3$ (at STP).
- 4.3.8 However, it is necessary to consider mass transfer and ventilation effects in the assessment (which is the rate of transfer that depends on the vapour pressure at the surface and the partial pressure of the vapour in the surrounding gas), together with applying 'good' steady-state ventilation (which is the emission rate arising from the substance divided by the ventilation rate).

$$C_{ss} = \frac{G}{Q}$$

Where:

- C_{ss} = steady-state concentration (mg/m^3)
- G = emission rate (mg/s)
- Q = ventilation rate (m^3/s)

4.3.9 The concentration in equilibrium is considered approximately as follows:

$$C_{ss} \approx C_{eq} \times \frac{k_L a}{k_L a + ACH}$$

Where:

- $k_L a$ = mass transfer coefficient (air-side controlled)
- ACH = air changes per hour, typically 3–10 hr⁻¹ (industrial indoor environment). The minimum calculated ACH for Knottingley is 3 hr⁻¹

4.3.10 For covered / closed systems, mass transfer is air-side limited, and emissions are further constrained by reduced turbulence, minimal exposed surface area and limited gas exchange. This results in reductions of at least one order of magnitude relative to open tank assumptions.

4.3.11 The initial calculations are based on assuming an open system, considering the mass transfer and ventilation effects and where processing comprises a covered or partially covered process (closed system), and this will further reduce the mass transfer, and the air movement and turbulence above the aqueous solution is limited. For example, for the recovery of ammonia, the equipment is sealed with no open vessels. Although the headspace above the substance is considered in near equilibrium, the actual emissions are affected by leakage and ventilation. Instead of surface evaporation, emissions are fugitive from lid gaps, seals, access ports and pressure equalisation vents rather than equilibrium driven.

4.3.12 Under such circumstances, this combined effect can lead to a reduction of ~10× or greater in the concentration. Condensation and re-absorption within the headspace will further reduce emissions. Therefore, under such circumstances, the emission concentrations could be between 0.15-1.5mg/m³ for HCl, 2.6-26mg/m³ for sulphur dioxide and 1300-4000mg/m³ for ammonia prior to venting and treatment of the air emissions.

4.3.13 Conservatism is inherent in the above assessment due to the use of equilibrium-based vapour pressure estimates, open-system mass transfer coefficients, and upper-range volatilisation assumptions, particularly for ammonia and SO₂. Therefore, the short-term concentration applied are the upper bound range for HCl, and the mid-range value for SO₂ and ammonia (due to conservatism of volatilisation).

4.3.14 Although the overview of the emissions control equipment (Section 2) suggests a conservative removal rate of 90%, a review of literature shows that acid gas scrubbers typically achieve greater than this, for HCl: 95–99% removal rates, NH₃: 95–99% removal rates and SO₂: 90–98% removal rates (depending on reagent and design). Therefore, the concentration applied in the H1 assessment are based on assuming a 95% removal rate through treatment. The concentration inputs in the H1 assessment are presented in Table 4.

Table 4: Long- and short-term concentration used in the H1 assessment based on the removal rate of the emissions control equipment

Substance	Long-term concentration (mg/m ³)	Short-term concentration (mg/m ³)
Hydrogen chloride (20% aqueous solution) 90% removal in the treatment	0.015	0.15
Sulphur dioxide – 90%+ removal in the treatment	0.26	2.6
Sulphur dioxide – 95%+ removal in the treatment	0.13	1.3
Ammonia (22% aqueous solution) – 90%+ removal in the treatment	130	270
Ammonia (22% aqueous solution) – 95%+ removal in the treatment	65	135

4.4 Particulates

4.4.1 The FCC Blackburn Meadows facility uses various physico chemical methods to treat aqueous liquid wastes, solid and powder wastes. The treatment includes filters prior to the wet scrubbers treatment. The Blackburn Meadows February 2026 stack monitoring data recorded total particulate matter of 0.14mg/m³ from the wet scrubber emissions. In the absence of site specific data for Knottingley, this value has been applied to the H1 assessment, used for both the short-term (the results for Blackburn Meadows were from 1 hour monitoring period) and long-term (although using the 1-hour monitoring data which is a conservative assumption).

4.5 Results of the process contribution (PC)

4.5.1 The PC values have been calculated for a range of substances associated with the waste management activities at the Site. The long- and short-term PC values are calculated using the Environment Agency H1 assessment model, based on the data and assumptions set out in this report.

4.5.2 Copies of the input data sheets (air release points and emissions inventory) and the output table (air tests) are present at Appendix 3, together with a copy of the H1 assessment Excel™ model, provided with the submission. The results are summarised in Table 5.

Table 5: Long- and short-term PC values and the percentage of the PC value compared to the EAL

Substance	EAL (µg/m ³)	PC (µg/m ³)	%PC of EAL	EAL (µg/m ³)	PC (µg/m ³)	%PC of EAL
	Long-term			Short-term		
Xylene, o-, m-, p- or mixed isomers	4410	0.24	0.01	66200	57.9	0.087
Benzene	5	0.027	0.54	30	0.5	1.67
Toluene	260	3.82	1.47	8000	12.3	0.154
Ethylbenzene	4410	0.03	0.00	55200	13.54	0.025
Tetrachloroethylene	40	0.06	0.15		2.54	
Trichloroethylene	2	0.06	3.00		1.57	
Methylene chloride (dichloromethane)	770	0.06	0.01	2100	1.43	0.068
Acetone	18100	0.03	0.00	362000	12.09	0.003
Methyl ethyl ketone (MEK, 2-Butanone)	6000	0.03	0.00	89900	12.09	0.01
Methanol	2660	0.04	0.00	33300	12.09	0.04
2-propanol	9990	0.47	0.00	125000	12.21	0.010
Particulates	40	0.11	0.00275	50	1.7	3.40
Hydrogen chloride	0	0.01		750	3	0.40
Sulphur dioxide	0	0.1		125	15.5	12.40
Ammonia	180	2.83	1.57	2500	150	6.00
Shaded = above threshold criteria (Environment Assessment Limit, EAL)						

4.5.3 The initial stage of the assessment is intended to screen out a PC value for a substance which needs to meet both of the following criteria:

- The short-term PC is less than 10% of the short-term environmental standard (Environment Assessment Limit, EAL)
- The long-term PC is less than 1% of the long-term environmental standard (Environment Assessment Limit, EAL)

4.5.4 Based on the assessment, sulphur dioxide does not meet the short-term percentage of PC of the EAL. The short-term percentage of PC of the EAL is calculated at 12.4% (above the threshold of 10%). Toluene, trichloroethylene and ammonia do not meet the long-term percentage of PC of the EAL. The long-term percentage of the PC of the EAL for toluene, trichloroethylene and ammonia are calculated at 1.47%, 3% and 1.57%, respectively, which are only marginally above the screening criteria threshold (1%).

4.6 Predicted Environmental Concentration (PEC)

4.6.1 There are no designated protected conservation areas within 2km of the FCC Site that need to be considered in the H1 assessment.

4.6.2 The second stage of screening is to assess if the PEC thresholds are exceeded. This assessment needs to meet the following criteria.

- The short-term PC is less than 20% of the short-term environmental standard (EAL) minus twice the long term background concentration
- The long-term PEC is less than 70% of the long-term environmental standards (EAL)

Environmental standards

4.6.3 Under the UK's Local Air Quality Management (LAQM) framework, the local authority (Wakefield Council) primarily monitors nitrogen dioxide (NO₂) (main statutory focus) and particulate matter (PM₁₀ / PM_{2.5}). Toluene and trichloroethylene (and most VOCs) and ammonia are not routinely monitored at a UK local authority level, and SO₂ is not routinely monitored locally unless there is a specific industrial concern. SO₂ is no longer a key pollutant of concern for most of the UK, due to a decline of coal burning and the presence of industrial emission controls.

4.6.4 Toluene and trichloroethylene are not part of routine LAQM monitoring for UK local authorities. UK local authorities generally only monitor for benzene (as a regulated VOC). Typical UK background toluene concentrations using UK urban background datasets (DEFRA / EMEP-type data²), are expected in the range of 1–10 µg/m³ annual mean, and the estimate background concentration for trichloroethylene³ in the range of 0.1–0.5 µg/m³.

4.6.5 The UK air quality objectives for SO₂ are 350 µg/m³ (the 1-hour mean, and not to exceed >24 times/year) and 125 µg/m³ (the 24-hour mean, and not to exceed >3 times/year). Because SO₂ is not actively monitored locally, background concentrations are taken from DEFRA national background maps⁴, where urban background SO₂ in UK towns similar to Wakefield is typically in the range of 1–5 µg/m³ annual mean. This concentration is often near the analytical detection limits. Therefore SO₂ value used (that may be typical for Wakefield authority) is very low and well below regulatory limits, except possibly very near specific industrial sources.

4.6.6 In the UK, ammonia is primarily tracked through national modelling (DEFRA) and limited rural monitoring networks (e.g. UK National Ammonia Monitoring Network⁵). Estimated urban background concentrations for ammonia are in the range of 1 – 5 µg/m³.

² [Data selector for Air Quality statistics - data.gov.uk](#)

³ [Trichloroethylene: toxicological overview - GOV.UK](#)

⁴ [Background Mapping data for local authorities - DEFRA UK Air - GOV.UK](#)

⁵ [UKEAP: National Ammonia Monitoring Network - DEFRA UK Air - GOV.UK](#)

PEC assessment of the results with EALToluene

- 4.6.7 For toluene, the short-term PC is $12.3 \mu\text{g}/\text{m}^3$, which is 0.154% of the EAL ($260 \mu\text{g}/\text{m}^3$) and below the criteria threshold (initial screening), and therefore passes the initial stage of screening.
- 4.6.8 The long-term EAL for toluene is $260 \mu\text{g}/\text{m}^3$, the PC is $3.82 \mu\text{g}/\text{m}^3$ and therefore 1.47% of the EAL and above the initial 1% threshold screening.
- 4.6.9 Assuming a background concentration of $10 \mu\text{g}/\text{m}^3$, the long-term EAL is $270 \mu\text{g}/\text{m}^3$ and 70% of this EAL is $189 \mu\text{g}/\text{m}^3$. Given that the long-term PC for toluene is $3.82 \mu\text{g}/\text{m}^3$, this is below this criteria threshold.

Trichloroethylene

- 4.6.10 For trichloroethylene, there is no short-term EAL.
- 4.6.11 The long-term PC is $0.06 \mu\text{g}/\text{m}^3$ which is 3% of the EAL ($2 \mu\text{g}/\text{m}^3$) and above the initial 1% threshold screening.
- 4.6.12 Assuming a background concentration of $0.5 \mu\text{g}/\text{m}^3$, the long term EAL is $2.5 \mu\text{g}/\text{m}^3$ and 70% of this EAL is $1.75 \mu\text{g}/\text{m}^3$. Given that the long-term PC for trichloroethylene is $0.06 \mu\text{g}/\text{m}^3$, this is below this criteria threshold.

Sulphur dioxide

- 4.6.13 For sulphur dioxide (SO_2), the short-term EAL is $125 \mu\text{g}/\text{m}^3$, the PC is $15.5 \mu\text{g}/\text{m}^3$ and therefore 12.4% of the EAL and above the initial 10% threshold screening.
- 4.6.14 Assuming a background concentration of $5 \mu\text{g}/\text{m}^3$ (the upper range annual mean), short-term EAL is $130 \mu\text{g}/\text{m}^3$ and 20% of this EAL is $26 \mu\text{g}/\text{m}^3$ and minus $10 \mu\text{g}/\text{m}^3$ (2 x background of $5 \mu\text{g}/\text{m}^3$) is $16 \mu\text{g}/\text{m}^3$. The PC is $15.5 \mu\text{g}/\text{m}^3$ and below the threshold criteria of $16 \mu\text{g}/\text{m}^3$. If the background of $1 \mu\text{g}/\text{m}^3$ were applied, the threshold would be $23.2 \mu\text{g}/\text{m}^3$.
- 4.6.15 There is no long term EAL for SO_2 to assess the long-term threshold criteria.

Ammonia

- 4.6.16 For ammonia, the short-term PC is $150 \mu\text{g}/\text{m}^3$, which is 6% of the EAL ($2500 \mu\text{g}/\text{m}^3$) and below the criteria threshold (initial screening), and therefore passes the initial stage of screening.
- 4.6.17 The long-term PC is $2.83 \mu\text{g}/\text{m}^3$ which is 1.57% of the EAL ($180 \mu\text{g}/\text{m}^3$) and above the initial 1% threshold screening.

4.6.18 Assuming a background concentration of $5 \mu\text{g}/\text{m}^3$ (worst case), the long-term EAL is $7.83 \mu\text{g}/\text{m}^3$ and 70% of this EAL is $5.48 \mu\text{g}/\text{m}^3$. Given that the long-term PC for toluene is $2.83 \mu\text{g}/\text{m}^3$, this is below this criteria threshold.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

- 5.1.1 In the absence of site-specific emissions monitoring data for the Knottingley facility, a conservative and precautionary H1 assessment has been undertaken using representative data from FCC's Blackburn Meadows installation, supplemented by conservative assumptions for substances where empirical data are unavailable. The approach adopts realistic worst-case scenarios, including the use of upper-bound emission concentrations, conservative volatilisation estimates, and assumed abatement efficiencies that are at the mid-range of typical performance ranges for scrubber systems.
- 5.1.2 The assessment demonstrates that emissions of VOC, particulates, hydrogen chloride (HCl), sulphur dioxide (SO₂), and ammonia (NH₃) are expected to be low following treatment. For VOC, the use of both stack monitoring and occupational exposure data from a comparable facility ensures that the emissions profile applied in the model is representative of the waste streams to be treated. Where direct data were unavailable (e.g. ketones and alcohols), reasonable surrogate values have been applied.
- 5.1.3 The initial screening assessment indicates that the majority of substances are screened out at Stage 1, with process contributions (PC) below the Environmental Assessment Limits (EAL). A small number of substances (toluene, trichloroethylene, ammonia, and sulphur dioxide) marginally exceeded the conservative Stage 1 screening thresholds. However, these exceedances are minor and expected given the deliberately precautionary assumptions embedded in the assessment.
- 5.1.4 Particulate emissions are negligible and well within applicable criteria.
- 5.1.5 A second-stage assessment considering Predicted Environmental Concentrations (PEC), including appropriate background concentrations, confirms that all substances meet the required criteria. In particular:
- Short-term and long-term PECs for VOC (including toluene and trichloroethylene) remain below relevant EAL thresholds.
 - Sulphur dioxide, although exceeding the Stage 1 screening threshold, is demonstrated to comply with Stage 2 criteria when background concentrations are considered.
 - Ammonia emissions are also shown to be within acceptable limits when assessed against long-term standards.
- 5.1.6 There are no designated ecological receptors within 2 km of the site, and background air quality in the area is typical of UK urban environments, with generally low concentrations of the substances assessed.
- 5.1.7 Overall, the assessment concludes that emissions to air from the proposed activities at the Knottingley facility will not give rise to significant environmental or human health impacts.

The predicted impacts are low, compliant with regulatory thresholds, and consistent with Best Available Techniques (BAT) for this type of installation. Consequently, the proposed operations are considered acceptable from an air quality perspective.

5.2 Recommendations for Air Emissions Monitoring

- 5.2.1 To ensure continued compliance with the Best Available Techniques (BAT) requirements and to validate the assumptions applied within the H1 assessment, a proportionate and risk-based air emissions monitoring strategy should be implemented at the Knottingley facility. The following recommendations are made:

Initial Validation Monitoring

- 5.2.2 Upon commissioning of the facility and installation of the emissions control systems (e.g. activated carbon units, wet scrubbers and filtration systems), baseline stack emissions monitoring will be undertaken. This monitoring should verify the performance of abatement systems against design specifications and to confirm that emissions concentrations are consistent with, or lower than, those assumed in the H1 assessment. The key pollutants will include Total VOCs, speciated VOCs (where practicable), particulates, hydrogen chloride (HCl), sulphur dioxide (SO₂), and ammonia (NH₃).

Routine Periodic Stack Monitoring

- 5.2.3 A programme of periodic emissions monitoring will be established for all significant emission points to air. The monitoring frequency should initially be undertaken at least annually, with potential to reduce frequency subject to demonstrated compliance and agreement with the regulator.
- 5.2.4 The monitoring and testing will be conducted under representative operating conditions using standard reference methods (e.g. MCERTS, where applicable), which should be used to ensure data quality and comparability.

Fugitive Emissions Monitoring

- 5.2.5 A programme for the monitoring and management of fugitive emissions will be implemented, comprising routine site inspections (e.g. sniff testing, visual checks). This may be supplemented with the use of portable VOC analysers in areas of potential release (e.g. waste reception, tank storage, processing areas).

Workplace Exposure Monitoring

- 5.2.6 Although primarily for health and safety compliance (e.g. COSHH), periodic occupational exposure monitoring will be undertaken, which also provides helpful supporting information on potential emission sources and control effectiveness within buildings.

Monitoring During Abnormal Conditions

- 5.2.7 Specific monitoring or increased vigilance may be applied during start-up and shutdown operations, maintenance activities, periods of equipment malfunction or failure.
- 5.2.8 Appropriate contingency measures should be in place, including cessation of operations where emission control systems are not fully functional.

Data Review and Reporting

- 5.2.9 The monitoring results will be routinely reviewed to identify trends, confirm compliance with permit limits, and assess the ongoing performance of abatement systems.
- 5.2.10 Results will be reported in accordance with permit requirements and made available to the regulator as necessary.
- 5.2.11 Any exceedances will be investigated further, including corrective action, and review of operational procedures where necessary.

Continuous Improvement

- 5.2.12 The monitoring data will inform ongoing optimisation of the emission control systems. Opportunities to improve abatement efficiency, reduce emissions further, or refine monitoring approaches will be regularly assessed in line with BAT principles.
- 5.2.13 The monitoring strategy will align with the BAT Reference Document for Waste Treatment (2018) and the Environment Agency's guidance on appropriate measures. Monitoring will remain proportionate to the risk, considering the low predicted environmental impact demonstrated by the H1 assessment.
- 5.2.14 Overall, the implementation of a structured monitoring programme will ensure that emissions to air remain well controlled, that the assumptions made in the assessment are validated, and that the facility continues to operate in accordance with BAT and regulatory expectations.

APPENDIX 1

**Blackburn Meadows Stack Emissions Monitoring Report
(SEMP) dated February 2026 reference LNO 19824**

STACK EMISSIONS MONITORING REPORT



Unit E Broadheath Network Centre
Atlantic Street, Altrincham
Cheshire
WA14 5EW
Tel: 0161 443 0980

Your contact at SOCOTEC UK LTD

Dominic Houghton
Business Manager - North
Tel: 0161 443 0981
Email: dominic.houghton@socotec.co.uk

Operator & Address:

FCC Environment
Waste Treatment Division
Blackburn Meadows STW
Alsing Road
Sheffield
South Yorkshire
S9 1HF

Permit Reference:

EPR Permit: MP3131SA

Release Point:

EP3

Sampling Date(s):

12th February 2026

SOCOTEC Job Number:	LNO 19824
Report Date:	24th February 2026
Version:	1
Report By:	Dan Marechal
MCERTS Number:	MM 22 1751
MCERTS Level:	MCERTS Level 2 - Team Leader
Technical Endorsements:	1, 2, 3 & 4
Report Approved By:	Mike Howell
MCERTS Number:	MM 13 1226
Business Title:	MCERTS Level 2 - Team Leader
Technical Endorsements:	1, 2, 3 & 4
Signature:	



Your feedback is appreciated. Please scan the QR Code and fill in a 2 minute survey. Thank you.



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EXECUTIVE SUMMARY

MONITORING OBJECTIVES

FCC Environment operates a waste processing process at Blackburn Meadows which is subject to EPR Permit MP3131SA, under the Environmental Permitting Regulations 2016.

SOCOTEC UK LTD were commissioned by FCC Environment to carry out stack emissions monitoring to determine the release of prescribed pollutants from the following Plant under normal operating conditions.

The results of these tests shall be used to demonstrate compliance with a set of emission limit values for prescribed pollutants as specified in the Plant's EPR Permit, MP3131SA.

Plant

EP3

Operator

FCC Environment
Waste Treatment Division
Blackburn Meadows STW
Alsing Road
Sheffield
South Yorkshire
S9 1HF

EPR Permit: MP3131SA

Stack Emissions Monitoring Test House

SOCOTEC UK LTD- Altrincham Laboratory
Unit E Broadheath Network Centre
Atlantic Street, Altrincham
Cheshire
WA14 5EW
UKAS and MCERTS Accreditation Number: 1015

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
The results of this testing relate only to the emission release point(s) listed in the report.
MCERTS accredited results will only be claimed where both the sampling and analytical stages are MCERTS accredited.
This test report shall not be reproduced, except in full, without written approval of SOCOTEC UK LTD.

EXECUTIVE SUMMARY

EMISSIONS SUMMARY					
Parameter	Units	Result	Calculated Uncertainty +/-	Emission Limit Value (ELV)	Accreditation
Total Particulate Matter	mg/m ³	0.14	0.29	50	MCERTS
Particulate Emission Rate	g/hr	0.60	1.2	-	
Total Volatile Organic Compounds	mg/m ³	1.8	1.4	-	MCERTS
Total Volatile Organic Compounds Emission Rate	g/hr	7.3	5.6	-	
Moisture	%	0.36	0.021	-	MCERTS
Stack Gas Temperature	°C	10	-	-	MCERTS
Stack Gas Velocity	m/s	16.3	0.39	-	
Gas Volumetric Flow Rate (Actual)	m ³ /hr	4418	226	-	
Gas Volumetric Flow Rate (STP, Wet)	m ³ /hr	4134	212	-	
Gas Volumetric Flow Rate (STP, Dry)	m ³ /hr	4119	211	-	
Gas Volumetric Flow Rate at Reference Conditions	m ³ /hr	4134	212	-	

ND = None Detected,

Results at or below the limit of detection are highlighted by bold italic text.

The above volumetric flow rate is calculated using data from the preliminary survey. Mass emissions for non isokinetic tests are calculated using these values. For all isokinetic testing the mass emission is calculated using test specific flow data and not the above values.

Reference conditions are 273K, 101.3kPa without correction for water vapour

EXECUTIVE SUMMARY

MONITORING TIMES			
Parameter	Sampling Date(s)	Sampling Times	Sampling Duration
Total Particulate Matter Run 1	12 February 2026	13:14 - 14:14	60 minutes
Total Volatile Organic Compounds Run 1	12 February 2026	13:14 - 14:14	60 minutes
Preliminary Stack Traverse	12 February 2026	13:02	-

EXECUTIVE SUMMARY

PROCESS DETAILS

Parameter	Process Details
Description of process	Waste processing
Continuous or batch	Continuous
Product Details	Waste processing
Part of batch to be monitored (if applicable)	N/A
Normal load, throughput or continuous rating	Normal Load
Fuel used during monitoring	N/A
Abatement	Wet Scrubber
Plume Appearance	None visible

EXECUTIVE SUMMARY

Monitoring Methods

The selection of standard reference / alternative methods employed by SOCOTEC is determined, wherever possible by the hierarchy of method selection outlined in Environment Agency technical Guidance 'Monitoring stack emissions: techniques and standards for periodic monitoring'.

MONITORING METHODS							
Species	Method Standard Reference Method / Alternative Method	SOCOTEC Technical Procedure	UKAS Lab Number	Method Accreditation	Limit of Detection (LOD)	Calculated MU +/- % Result	Calculated MU +/- % ELV
Total Particulate Matter	SRM - BS EN 13284-1 & MID	AE 104	1015	MCERTS	0.14 mg/m ³	200%	0.58%
Total Volatile Organic Compounds	SRM - BS EN 12619:2013	AE 102	1015	MCERTS	0.3 mg/m ³	77%	N/A - No ELV
Moisture	BS EN 14790	AE 105	1015	MCERTS	0.01%	5.9%	N/A - No ELV
Velocity	SRM - BS EN ISO 16911-1 & MID	AE 154	1015	MCERTS	5 Pa	2.4%	N/A - No ELV
Volumetric Flow Rate	SRM - BS EN ISO 16911-1 & MID	AE 154	1015	MCERTS	-	5.1%	N/A - No ELV

BS EN 14790 has been validated over a range of 4 - 40%. It is however the preferred method of the Environment Agency for concentrations below 4%

EXECUTIVE SUMMARY

Analytical Methods

The following tables list the analytical methods employed together with the custody details. Unless otherwise stated the samples are archived at the analysis lab location.

SAMPLING METHODS WITH SUBSEQUENT ANALYSIS							
Species	Analytical Technique	Analytical Procedure	UKAS Lab Number	Analysis Accreditation	Analysis Lab	Analysis Report No. Date of Analysis	Archive Period
Total Particulate Matter	Gravimetric	AE 106	1015	MCERTS	SOCOTEC (Altrincham)	N/A	8 Weeks

ON-SITE TESTING							
Species	Analytical Technique	Analytical Procedure	UKAS Lab Number	Accreditation	Laboratory	Data Archive Location	Archive Period
Total Volatile Organic Compounds	Flame Ionisation Detection	AE 102	1015	MCERTS	SOCOTEC (Altrincham)	SOCOTEC (Altrincham)	5 years
Moisture	Gravimetric	AE 105	1015	MCERTS	SOCOTEC (Altrincham)	-	-

EXECUTIVE SUMMARY

SAMPLING LOCATION					
Sampling Plane Validation Criteria	Value	Units	Requirement	Compliant	Method
Lowest Differential Pressure	210	Pa	$\geq 5 \text{ Pa}$	Yes	BS EN 15259
Lowest Gas Velocity	16.3	m/s	-	-	-
Highest Gas Velocity	16.3	m/s	-	-	-
Ratio of Gas Velocities	1.0	: 1	$< 3 : 1$	Yes	BS EN 15259
Mean Velocity	16.3	m/s	-	-	-
Maximum angle of flow with regard to duct axis	< 15	$^{\circ}$	$< 15^{\circ}$	Yes	BS EN 15259
No local negative flow	Yes	-	-	Yes	BS EN 15259

DUCT CHARACTERISTICS		
	Value	Units
Shape	Circular	-
Depth	0.31	m
Width	-	m
Area	0.08	m ²
Port Depth	90	mm

SAMPLING LINES & POINTS		
	Isokinetic	Non-Iso & Gases
Sample port size	4" BSP	4" BSP
Number of lines used	1	1
Number of points / line	1	1
Duct orientation	Vertical	Vertical
Filtration	-	Out Stack
Filtration for TPM	In Stack	-

SAMPLING PLATFORM	
General Platform Information	
Permanent / Temporary Platform / Ground level / Floor Level / Roof	Permanent
Inside / Outside	Ground Level

EA Guidance, Monitoring stack emissions: measurement locations.	
Is there a sufficient working area so work can be performed in a compliant manner	Yes
Platform has 2 levels of handrails (approximately 0.5 m & 1.0 m high)	N/A
Platform has vertical base boards (approximately 0.25 m high)	N/A
Platform has removable chains / self closing gates at the top of ladders	N/A
Handrail / obstructions do not hamper insertion of sampling equipment	Yes
Depth of Platform = $>$ Stack depth / diameter + wall and port thickness + 1.5m	N/A

Sampling Platform Improvement Recommendations (if applicable)

The sampling location meets all the requirements specified in EA Guidance, Monitoring stack emissions: measurement locations.

EXECUTIVE SUMMARY

Sampling & Analytical Method Deviations

In this instance there were no deviations from the sampling and analytical methods employed.

APPENDICES

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APPENDIX 1 - Monitoring Schedule, Calibration Checklist & Monitoring Team

APPENDIX 2 - Summaries, Calculations, Raw Data and Charts

APPENDIX 3 - Measurement Uncertainty Budget Calculations

APPENDIX 1 - Monitoring Schedule, Calibration Checklist & Monitoring Team

MONITORING SCHEDULE					
Species	Method Standard Reference Method / Alternative Method	SOCOTEC Technical Procedure	UKAS Lab Number	MCERTS Accredited Method	Number of Samples
Total Particulate Matter	SRM - BS EN 13284-1 & MID	AE 104	1015	MCERTS	1
Total Volatile Organic Compounds	SRM - BS EN 12619:2013	AE 102	1015	MCERTS	1
Moisture	BS EN 14790	AE 105	1015	MCERTS	1
Velocity	SRM - BS EN ISO 16911-1 & MID	AE 154	1015	MCERTS	1

APPENDIX 1 - Monitoring Schedule, Calibration Checklist & Monitoring Team

CALIBRATABLE EQUIPMENT CHECKLIST					
Extractive Sampling		Instrumental Analyser/s		Miscellaneous	
Equipment	Equipment I.D.	Equipment	Equipment I.D.	Equipment	Equipment I.D.
Control Box DGM	LNO 13-18	Horiba PG - 350E Analyser	-	Laboratory Balance	LNO 00-13 / 00-33
Box Thermocouples	LNO 03-18	FT-IR	-	Tape Measure	LNO 24-DM
Meter In Thermocouple	LNO 03-18	FT-IR Oven Box	-	Stopwatch	LNO 17-DM
Meter Out Thermocouple	LNO 03-18	Bernath 3006 FID	-	Protractor	-
Control Box Timer	LNO 17-18	Signal 3030 FID	-	Barometer	LNO 08-DM
Oven Box	-	Servomex	-	Digital Micromanometer	LNO 01-DM
Probe	LNO 11-04	JCT Heated Head Filter	-	Digital Temperature Meter	LNO 03-DM
Probe Thermocouple	LNO 10-04	Thermo FID	LNO 21-66	Stack Thermocouple	LNO 10-DM
Probe	-	Stackmaster	-	Mass Flow Controller	-
Probe Thermocouple	-	FTIR Heater Box for Heated Line	-	MFC Display module	-
S-Pitot	LNO 06-DM	Anemometer	-	1m Heated Line (1)	-
L-Pitot	-	Ecophysics NOx Analyser	-	1m Heated Line (2)	-
Site Balance	LNO 14-DM	Chiller (JCT/MAK 10)	-	1m Heated Line (3)	-
Last Impinger Arm	-	Heated Line Controller (1)	LNO 03-70	5m Heated Line (1)	-
Dioxins Cond. Thermocouple	-	Heated Line Controller (2)	-	10m Heated Line (1)	LNO 18-45
Callipers	LNO 31-DM	Site temperature Logger	-	10m Heated Line (2)	-
Small DGM	-	Gas Divider (1)	-	15m Heated Line (1)	-
Heater Controller	-	Gas Divider (2)	-	20m Heated Line (1)	-
Inclinometer (Swirl Device)	LNO 23-DM			20m Heated Line (2)	-

NOTE: If the equipment I.D is represented by a dash (-), then this piece of equipment has not been used for this test.

CALIBRATION GASES					
Gas (traceable to ISO 17025)	Cylinder I.D Number	Supplier	ppm	%	Analytical Tolerance +/- %
Propane	LNOHPC179	BOC	10.11	-	2.0

Note: Span gases may be diluted to an appropriate range with a gas divider.

STACK EMISSIONS MONITORING TEAM

MONITORING TEAM								
Personnel	MCERTS Number	MCERTS		TE / H&S Qualifications and Expiry Date				
		Level	Expiry	TE1	TE2	TE3	TE4	H&S
Dan Marechal	MM 22 1751	MCERTS Level 2	Dec-27	Jul-28	Mar-29	Apr-29	Nov-28	Dec-27
Paul Marechal	MM 25 1912	MCERTS Trainee	Oct-30	-	-	-	-	Oct-30

APPENDIX 2 - Summaries, Calculations, Raw Data and Charts

TOTAL PARTICULATE MATTER SUMMARY					
Parameter	Sampling Times	Concentration mg/m ³	Uncertainty mg/m ³	ELV mg/m ³	Emission Rate g/hr
Run 1	13:14 - 14:14 12 February 2026	0.14	0.29	50	0.60
Blank	-	0.14	-	-	-

Reference conditions are 273K, 101.3kPa without correction for water vapour

Acetone Blank Value mg/l	Acceptable Value mg/l
0.3	1.0

FILTER INFORMATION

SAMPLES								
Test	Filter & Probe Rinse Number	Filter Start Weight g	Filter End Weight g	Mass Gained on Filter g	Probe Rinse Start Weight g	Probe Rinse End Weight g	Mass Gained on Probe g	Combined Total Mass Gained g
Run 1	G8382	0.10732	0.10725	-0.00007	63.97613	63.97583	-0.00030	0.00022

If total mass gained is less than the LOD then the LOD is reported

BLANKS								
Test	Filter & Probe Number	Filter Start Weight g	Filter End Weight g	Mass Gained Filter g	Probe Start Weight g	Probe End Weight g	Mass Gained Probe g	Combined Total Mass Gained g
Run 1	G8381	0.10868	0.10853	-0.00015	64.96457	64.96397	-0.00060	0.00022

If total mass gained is less than the LOD then the LOD is reported

APPENDIX 2 - Summaries, Calculations, Raw Data and Charts

ISOKINETIC SAMPLING EQUATIONS - RUN 1				TPM
Absolute pressure of stack gas, P_s			Molecular weight of dry gas, M_d	
Barometric pressure, P _b	Kpa	98.2	CO ₂	% 0.04
Stack static pressure, P _{static}	pa	45.0	O ₂	% 20.90
P _s = P _b + P _{static}	Kpa	98.2	Total	% 20.94
			N ₂ (100 - Total)	% 79.06
Vol. of water vapour collected, V_{wstd}			M _d = 0.44(%CO ₂)+0.32(%O ₂)+0.28(%N ₂)	28.84
Moisture trap weight increase, V _{lc}	g	4.4	Molecular weight of wet gas, M_s	
V _{wstd} = (0.001246)(V _{lc})	m ³	0.0054824	M _s = M _d (1 - B _{w0}) + 18(B _{w0})	g/gmol 28.80
Volume of gas metered dry, V_{mstd}			Actual flow of stack gas, Q_a	
Volume of gas sample through gas meter, V _m		1.678	Area of stack, A _s	m ² 0.08
Gas meter correction factor, Y _d		0.972	Q _a = (60)(A _s)(V _s)	m ³ /min 75.0
Mean dry gas meter temperature, T _m		285	Total flow of stack gas, Q	
Mean pressure drop across orifice, DH	mmH ₂ O	73.804	Conversion factor (K/mm.Hg)	0.3592
V _{mstd} = $\frac{(0.3592)(V_m)(P_b + (DH/13.6))(Y_d)}{T_m}$	m ³	1.524	Q _{std} = $\frac{(Q_a)P_s(0.3592)(1-B_{w0})}{(T_s)}$	Dry 69.2
Volume of gas metered wet, V_{mstw}			Q _{stdO2} = $\frac{(Q_a)P_s(0.3592)(1-B_{w0})(O_2\text{REF})}{(T_s)}$	@O ₂ ref No O2 Ref
V _{mstw} = V _{mstd} + V _{wstd}	m ³	1.5296	Q _{stw} = $\frac{(Q_a)P_s(0.3592)}{(T_s)}$	Wet 69.42
Vol. of gas metered at O₂ Ref. Cond., V_{mstd@X%O2}			Percent isokinetic, %I	
Is the process burning hazardous waste? (if yes, no favourable oxygen correction)		No	Nozzle diameter, D _n	mm 5.93
% oxygen measured in gas stream, act%O ₂		20.9	Nozzle area, A _n	mm ² 27.59
% oxygen reference condition		21	Total sampling time, q	min 60
O ₂ Reference O ₂ Ref = 21.0 - act%O ₂		No O2 Ref	%I = $\frac{(4.6398E6)(T_s)(V_{mstd})}{(P_s)(V_s)(A_n)(q)(1-B_{w0})}$	% 100.5
Factor = $\frac{21.0 - \text{ref}\%O_2}{21.0 - \text{act}\%O_2}$		No O2 Ref	Acceptable isokinetic range 95% to 115%	Yes
V _{mstd@X%oxygen} = (V _{mstd}) (O ₂ Ref)	m ³	No O2 Ref	Particulate Concentration, C	
Moisture content, B_{w0}			Mass collected on filter, M _f	g -0.00007
B _{w0} = $\frac{V_{wstd}}{V_{mstd} + V_{wstd}}$	%	0.0036	Mass collected in probe, M _p	g -0.00030
		0.36	Total mass collected, M _n	g 0.00022
Moisture by FTIR			C _{wet} = $\frac{M_n}{V_{mstw}}$	mg/m ³ 0.144
Velocity of stack gas, V_s			C _{dry} = $\frac{M_n}{V_{mstd}}$	mg/m ³ 0.145
Velocity pressure coefficient, C _p		0.86	C _{dry@X%O2} = $\frac{M_n}{V_{mstd@X\%oxygen}}$	mg/m ³ No O2 Ref
Mean of velocity heads, DP _{avg}	Pa	220.83	Particulate Emission Rates, E	
Mean stack gas temperature, T _s	K	286	E = [(C _{wet})(Q _{stw})(60)] / 1000	0.60
Gas density (wet, ambient), ρ	kg/m ³	1.190		
ρ = (M _s *P _s)/(8.314*T _s)				
Stack Velocity, V _s	$V_s = \frac{\sum_{i=1}^n V_i}{n}$	m/s		
		16.57		

As the total mass gained was less than the LOD, the LOD has been reported

APPENDIX 2 - Summaries, Calculations, Raw Data and Charts

TOTAL PARTICULATE MATTER QUALITY ASSURANCE CHECKLIST

LEAK RATE						
Run	Mean Sampling Rate litre/min	Pre-sampling Leak Rate litre/min	Post-sampling Leak Rate litre/min	Maximum Vacuum mm Hg	Acceptable Leak Rate litre/min	Leak Tests Acceptable?
Run 1	27.18	0.10	-	-431.8	0.54	Yes

In BS EN 13284-1:2017 a post sampling leak check is not required.

ISOKINETICITY		
Run	Isokinetic Variation %	Acceptable Isokineticity
Run 1	100.47	Yes

Acceptable isokinetic range 95% to 115%

WEIGHING BALANCE UNCERTAINTY			
Run	Result mg/m ³	5% ELV mg/m ³	LOD < 5% ELV
Run 1	0.14	2.5	Yes

The above is based on both the Filter and rinse uncertainty

BLANK VALUE				
Run	Overall Blank Value mg/m ³	Daily Limit Value mg/m ³	Acceptable Blank Value mg/m ³	Overall Blank Acceptable
Blank 1	0.14	50	5.0	Yes

FILTERS					
Run	Filter Material	Filter Size mm	Max Filtration Temperature °C	Pre-use Filter Conditioning Temperature °C	Post-use Filter Conditioning Temperature °C
Run 1	Glass Fibre	47	16	180	160

APPENDIX 2 - Summaries, Calculations, Raw Data and Charts

TOTAL VOLATILE ORGANIC COMPOUNDS SUMMARY

Test	Sampling Times	Concentration mg/m ³	LOD mg/m ³	ELV mg/m ³	Emission Rate g/hr
Run 1	13:14 - 14:14 12 February 2026	1.8	0.30	-	7.3

Reference conditions are 273K, 101.3kPa without correction for water vapour
FALSE

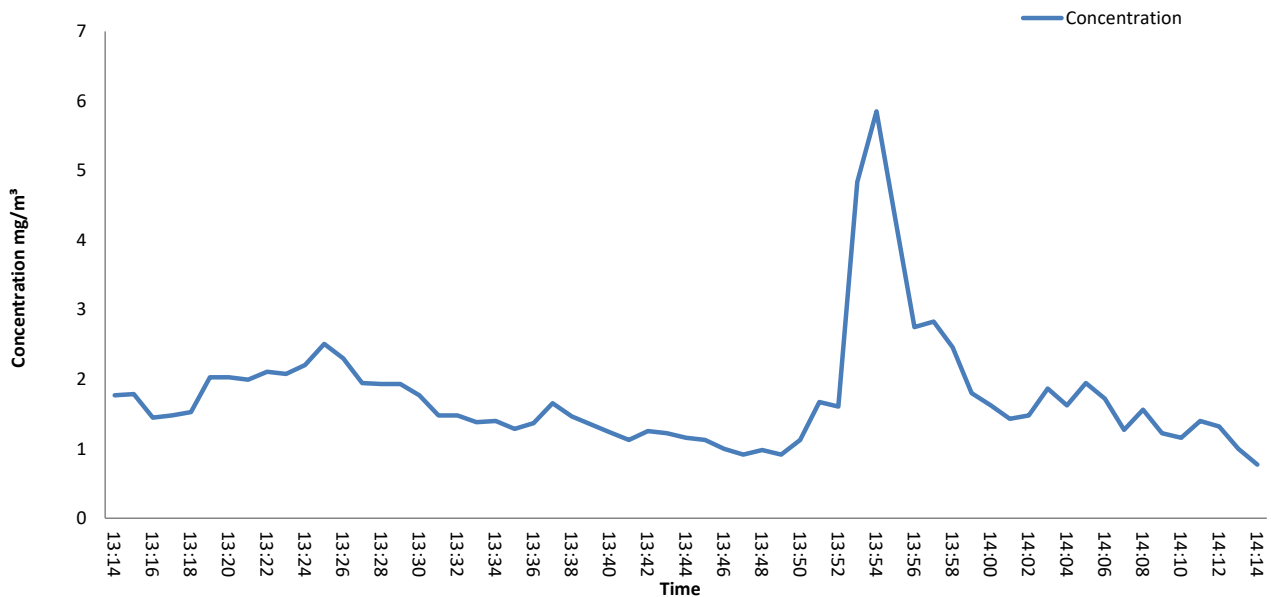
INSTRUMENTAL SPAN & ZERO CHECKS

PRE-SAMPLING CALIBRATION CHECKS								
Date	12 February 2026							
Start Time	12:52							
End Time	13:12							
Gas	Span Conc (ppm)	Analyser Range	Instrument Zero Reading	Instrument Span Reading	Instrument Zero Reading	Zero Down line reading	Span down line reading	Leak Rate (%)
Propane	10.1	100	-0.06	10.1	-0.08	-0.02	10.2	-0.69

Zero and Span gas contained 19.9% Oxygen

POST-SAMPLING CALIBRATION CHECKS								
Date	12 February 2026							
Start Time	14:15							
End Time	14:21							
Gas	Mean Raw Value ppm	Zero down line reading	Span down line reading	Zero Drift (%)	Span Drift (%)	Corrected for Zero Drift	Corrected for Span Drift	Corrected Values ppm / %
Propane	1.09	0.03	10.1	0.46	-1.26	x	x	N/A - not corrected

TOTAL VOLATILE ORGANIC COMPOUNDS EMISSIONS CHART



Reference conditions are 273K, 101.3kPa without correction for water vapour

APPENDIX 2 - Summaries, Calculations, Raw Data and Charts

MOISTURE CALCULATIONS

Moisture Determination - Isokinetic							
Test Number	Sampling Time and Date	Start Weight	End Weight	Total gain	Concentration	LOD	Uncertainty
		kg	kg	kg	%	%	%
Run 1	13:14 - 14:14 12 February 2026	3.7921	3.7965	0.0044	0.36	0.0081	5.9

Moisture Quality Assurance							
Test Number	Sampling Duration	Total Volume Sampled	Sampling Rate	Start Leak Rate	End Leak Rate	Acceptable Leak Rate	Leak Tests Acceptable?
	mins	l	l/min	l/min	l/min	l/min	
Run 1	60	1530	27.2	0.10	-	0.54	Yes

PRELIMINARY STACK SURVEY

Stack Characteristics		
Stack Diameter / Depth, D	0.31	m
Stack Width, W	-	m
Stack Area, A	0.08	m ²
Average stack gas temperature	10	°C
Stack static pressure	0.045	kPa
Barometric Pressure	98.2	kPa

Stack Gas Composition & Molecular Weights								
Component	Molar Mass M	Density kg/m ³ p	Conc Dry % Vol	Dry Volume Fraction r	Dry Conc kg/m ³ pi	Conc Wet % Vol	Wet Volume Fraction r	Wet Conc kg/m ³ pi
CO ₂	44	1.963059	0.042095	0.000421	0.000826	0.041944	0.000419	0.000823
O ₂	32	1.427679	20.900000	0.209000	0.298385	20.825092	0.208251	0.297315
N ₂	28	1.249219	79.057905	0.790579	0.987607	78.774551	0.787746	0.984067
H ₂ O	18	0.803070	-	-	-	0.358413	0.003584	0.002878

Where: $p = M / 22.41$ $pi = r \times p$

Calculation of Stack Gas Densities		
Determinand	Result	Units
Dry Density (STP), P_{STD}	1.2868	kg/m ³
Wet Density (STP), P_{STW}	1.2851	kg/m ³
Dry Density (Actual), P_{Actual}	1.2039	kg/m ³
Average Wet Density (Actual), $P_{ActualW}$	1.202	kg/m ³

Where:

$$P_{STD} = \text{sum of component concentrations, kg/m}^3 \text{ (not including water vapour)}$$

$$P_{STW} = (P_{STD} + pi \text{ of H}_2\text{O}) / (1 + (pi \text{ of H}_2\text{O} / 0.8036))$$

$$P_{Actual} = P_{STD} \times (Ts / Ps) \times (Pa / Ta)$$

$$P_{ActualW} = P_{STW} \times (Ts / Ps) \times (Pa / Ta)$$

APPENDIX 2 - Summaries, Calculations, Raw Data and Charts

PRELIMINARY STACK SURVEY

TRAVERSE 1

Date of Survey	12 February 2026
Time of Survey	13:02
Velocity Measurement Device:	S-Type Pitot

Sampling Line A								
Traverse Point	Distance into duct (m)	DP pt Pa (average of 3 readings)	DP pt mmH ₂ O (average of 3 readings)	Temp °C	Velocity m/s	Volumetric Flow Rate (actual) m ³ /s	O ₂ % Vol	Angle of Swirl °
1	0.16	214.9	21.9	10	16.3	1.2	-	<15
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
Mean	-	214.9	21.9	10	16.3	1.2	-	-

Sampling Line B								
Traverse Point	Distance into duct (m)	DP pt Pa (average of 3 readings)	DP pt mmH ₂ O (average of 3 readings)	Temp °C	Velocity m/s	Volumetric Flow Rate (actual) m ³ /s	O ₂ % Vol	Angle of Swirl °
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
Mean	-	-	-	-	-	-	-	-

PRELIMINARY STACK SURVEY QUALITY ASSURANCE CHECKLIST

PITOT LEAK CHECK								
Run	Pre Traverse Leak Rate				Post Traverse Leak Rate			
	Start Value mmH ₂ O	End Value mmH ₂ O	Difference %	Outcome	Start Value mmH ₂ O	End Value mmH ₂ O	Difference %	Outcome
Run 1	134	129	3.7	Pass	129	124	3.9	Pass

To complete a compliant pitot leak check a pressure of over 80 mmH₂O (or 800 Pa) is applied and the pressure drop monitored over 15 seconds. A drop of less than 5% must be observed.

S-Type Pitot Stagnation Check				
Run	Stagnation (Pa)	Reference (Pa)	Difference (Pa)	Outcome (Permitted +/- 10 Pa)
Run 1	44	46	-2.0	Pass

APPENDIX 2 - Summaries, Calculations, Raw Data and Charts

PRELIMINARY STACK SURVEY (CONTINUED)

Sampling Plane Validation Criteria				
EA Technical Guidance Note (Monitoring) M1	Result	Units	Requirement	Compliant
Lowest Average Differential Pressure	215	Pa	>= 5 Pa	Yes
Lowest Gas Velocity	16.3	m/s	-	-
Highest Gas Velocity	16.3	m/s	-	-
Ratio of Gas Velocities	1.0	-	< 3 : 1	Yes
Maximum angle of flow with regard to duct axis	<15	°	< 15°	Yes
No local negative flow	Yes	-	-	Yes

Calculation of Stack Gas Velocity, V		
Velocity at Traverse Point, $V = K_{pt} \times (1-e) \times \sqrt{2 \times DP_{pt} / P_{ActualW}}$		
Where:		
K_{pt} = Pitot tube calibration coefficient		
(1-e) = Compressibility correction factor, assumed at a constant 0.998		
Average Stack Gas Velocity, V_a	16.3	m/s

Calculation of Stack Gas Volumetric Flowrate, Q			
Duct gas flow conditions	Actual	Reference	Units
Temperature	10	0	°C
Total Pressure	98.245	101.3	kPa
Oxygen	20.9	21	%
Moisture	0.36	0.36	%
Pitot tube calibration coefficient, K_{pt}	0.86		

Gas Volumetric Flowrate	Result	Units
Average Stack Gas Velocity (V_a)	16.26	m/s
Stack Area (A)	0.08	m ²
Gas Volumetric Flowrate (Actual), Q_{Actual}	4418.43	m ³ /hr
Gas Volumetric Flowrate (STP, Wet), Q_{STP}	4133.76	m ³ /hr
Gas Volumetric Flowrate (STP, Dry), $Q_{STP,Dry}$	4118.95	m ³ /hr
Gas Volumetric Flowrate (REF), Q_{Ref}	4133.76	m ³ /hr

Where:

$Q_{Actual} = V_a \times A \times 3600$
 $Q_{STP} = Q (Actual) \times (T_s / T_a) \times (P_a / P_s)$
 $Q_{STP,Dry} = Q (STP) / (100 - (100 / Ma))$
 $Q_{Ref} = Q (STP) \times ((100 - Ma) / (100 - Ms)) \times ((21 - O_{2a}) / (21 - O_{2s}))$

Nomenclature:

T_s = Absolute Temperature, Standard Conditions, 273 K
 P_s = Absolute Pressure, Standard Conditions, 101.3 kPa
 T_a = Absolute Temperature, Actual Conditions, K
 P_a = Absolute Pressure, Actual Conditions, kPa
 Ma = Water vapour, Actual Conditions, % Vol
 Ms = Water vapour, Reference Conditions, % Vol
 O_{2a} = Oxygen, Actual Conditions, % Vol
 O_{2s} = Oxygen, Reference Conditions, % Vol

APPENDIX 3 - Measurement Uncertainty Budget Calculations

MEASUREMENT UNCERTAINTY BUDGET - TOTAL PARTICULATE MATTER

Run	Sampled Volume m ³	Sampled Gas Temp K	Sampled Gas Pressure kPa	Sampled Gas Humidity % by volume	Oxygen Content % by volume	Limit of Detection % by mass	Leak %	Uncollected Mass mg
MU required	≤ 2%	≤ 2%	≤ 1%	≤ 1%	≤ 10%	≤ 5% of ELV	≤ 2%	≤ 10% of ELV
Run 1	0.0030	2.0	0.50	1.0	N/A	0.22	-	-
as a %	0.20	0.70	0.51	1.0	N/A	0.29	0.37	0.00044
compliant?	Yes	Yes	Yes	Yes	N/A	Yes	Yes	Yes

Run	Volume (STP) m ³	Mass of particulate mg	O ₂ Correction -	Leak mg/m ³	Uncollected Mass mg	Combined uncertainty
Run 1	1.41	0.2208	1.0	0.00031	0.0001	-
MU as mg/m ³	0.0019	0.1443	-	0.00031	0.0001	0.14
MU as %	1.34	100.0000	-	0.212	0.0577	-

R1 - Uncertainty expressed at a 95% confidence level (where k = 2)	0.29	mg/m³	200.02	% Result	0.58	% ELV
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(k is a coverage factor which gives a 95% confidence in the quoted figures)

Reference – SOCOTEC Technical Procedure AE150 Estimation of Uncertainty of Measurement

APPENDIX 3 - Measurement Uncertainty Budget Calculations

MEASUREMENT UNCERTAINTY BUDGET - MOISTURE

Run	Sampled Volume m ³	Sampled Gas Temp K	Sampled Gas Pressure kPa	Sampled Gas Humidity % by volume	Oxygen Content % by volume	Leak %
MU required	≤ 2%	≤ 2%	≤ 1%	≤ 1%	≤ 10%	≤ 2%
Run 1	0.0030	2.0	0.50	1.0	N/A	-
as a %	0.20	0.70	0.51	1.0	N/A	0.37
compliant?	Yes	Yes	Yes	Yes	N/A	Yes

Run	Volume (STP) m ³	Mass Gained mg	O ₂ Correction -	Leak mg/m ³	Uncollected Mass mg	Combined uncertainty
Run 1	1.41	4400	1.0	6.13	58	-
MU as % v/v	0.005	0.008	-	0.001	0.005	0.011
MU as %	1.34	2.27	-	0.21	1.31	-

R1 - Uncertainty expressed at a 95% confidence level (where k = 2)	0.02	% v/v	5.91	%
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APPENDIX 3 - Measurement Uncertainty Budget Calculations

MEASUREMENT UNCERTAINTY BUDGET - VOLATILE ORGANIC COMPOUNDS RUN 1

Measured Concentration	1.8	mg/m ³
Limit	-	mg/m ³
Calibration Gas Concentration	16.176	mg/m ³
Range	160	mg/m ³

Performance characteristics	Value	Units	specification	MU Met?
Response time	35	seconds	<180	Yes
Logger sampling interval	60	seconds	-	-
Measurement period	60	minutes	-	-
Number of readings in measurement	60	-	-	-
Repeatability at zero	0.25	% full scale	<1 % range	Yes
Repeatability at span level	0.15	% full scale	<2 % range	Yes
Deviation from linearity	0.70	% of value	<2 % range	Yes
Zero drift	0.46	% full scale	<5% range / 24hr	Yes
Span drift	-1.26	% full scale	<5% range / 24hr	Yes
volume or pressure flow dependence	0.02	% of full scale/3 kPa	<2 % / 3 kPa	Yes
atmospheric pressure dependence	0.80	% of full scale/2 kPa	<3% / 2 kPa	Yes
ambient temperature dependence	0.01	% full scale/10K	<3% range / 10 K	Yes
dependence on voltage	0.10	% full scale/10V	< 0.1%vol /10 volt	Yes
losses in the line (leak)	-0.69	% of value	< 2% of span gas value	Yes
Uncertainty of calibration gas	1.0	% of value	< 2% of value	Yes

Performance characteristic	Uncertainty	Value of uncertainty quantity
Standard deviation of repeatability at zero	ur0	0.02
Standard deviation of repeatability at span level	urs	0.02
Lack of fit	ufit	0.65
Drift	u0dr	0.19
volume or pressure flow dependence	uspres	0.0006
atmospheric pressure dependence	uapres	0.04
ambient temperature dependence	utemp	0.000005
Dependence on voltage	uvolt	0.14
losses in the line (leak)	uleak	-0.007
Uncertainty of calibration gas	ucalib	0.010
Uncertainty in factor	uf	0.000

Measurement uncertainty Measured Concentration	1.76	mg/m ³
Combined uncertainty	0.69	mg/m ³
Expanded uncertainty	1.35	mg/m ³

Expanded uncertainty expressed with a level of confidence of 95%	-	% ELV
Expanded uncertainty expressed with a level of confidence of 95%	1.35	mg/m³
Expanded uncertainty expressed with a level of confidence of 95%	76.90	% value

Reference – SOCOTEC Technical Procedure AE150 Estimation of Uncertainty of Measurement

APPENDIX 3 - Measurement Uncertainty Budget Calculations

MEASUREMENT UNCERTAINTY BUDGET - VELOCITY & VOLUMETRIC FLOW RATE

Measured Velocity at Actual Conditions	16.3	m/s
Measured Volumetric Flow rate at Actual Conditions	4418	m ³ /hr

Performance Characteristics & Source of Value	Units	Values	Requirement	Compliant
Uncertainty of Local Gas Velocity Determination	-	0.010		
Uncertainty of pitot tube coefficient	-	1.71		
Uncertainty of mean local dynamic pressures	-	1.71		
Factor loading, function of the number of measurements.	3 readings	0.591	minimum 3	Yes
Range of measurement device	pa	1000		
Resolution	pa	1.00		
Calibration uncertainty	pa	32.93	<1% of Value or 20 Pa whichever is greater	Yes
Drift	% range	0.10		
Linearity	% range	0.06	<2% of value	Yes
Uncertainty of gas density determination				
Uncertainty of molar mass determination	kg/mol	0.00003		
Uncertainty of temperature measurement	K	1.44	<1% of value	Yes
Uncertainty of absolute pressure in the duct	pa	501		
Uncertainty associated with the calculation of density	kg/m ³	0.007		
Uncertainty associated with the measurement of local velocity	-	0.0001		
Uncertainty associated with the measurement of mean velocity	-	0.0001		

Measurement Uncertainty - Velocity	m/s
Combined uncertainty	0.20
Expanded uncertainty at a 95% Confidence Interval	0.39

Note - The expanded uncertainty uses a coverage factor of k = 2.

Expanded Measurement Uncertainty of Velocity at a 95% Confidence Interval	%
Expressed as a % of the Measured Velocity	1.2
Expanded uncertainty at a 95% Confidence Interval	2.4

Measurement Uncertainty Volumetric Flow Rate	m ³ /hr
Combined uncertainty	115
Expanded uncertainty at a 95% Confidence Interval	226

Note - The expanded uncertainty uses a coverage factor of k = 2.

Expanded Measurement Uncertainty of Volumetric Flow Rate at a 95% Confidence Interval	%
Expressed as a % of the Measured Volumetric Flow Rate	2.6
Expanded uncertainty at a 95% Confidence Interval	5.1

Reference – SOCOTEC Technical Procedure AE150 Estimation of Uncertainty of Measurement

END OF REPORT

Your feedback is appreciated. Please use the link below to complete a 2 minute survey. Thank you.

[Customer feedback - Altrincham Office](#)

APPENDIX 2

Blackburn Meadows. Monitoring to determine occupational exposures. Report reference 250906, date of testing : 15th – 19th September 2025



**MONITORING TO DETERMINE OCCUPATIONAL EXPOSURES
IN ACCORDANCE WITH THE CONTROL OF
SUBSTANCES HAZARDOUS TO HEALTH REGULATIONS**

UNDERTAKEN AT

**FCC ENVIRONMENT (UK) LTD
BLACKBURN MEADOWS WASTE TREATMENT
WORKS
SHEFFIELD**

REPORT REF. : 250906
DATE OF TESTING : 15TH – 19TH SEPTEMBER 2025
COPIES TO : MR R NEWTON
: MR A CUSWORTH

**Dukeries Environmental Testing
29 Pasture Close
Worksop
Nottinghamshire
S80 3QA
Tel : 01909 482888 MOB : 07711 347 207 Email : info@d-e-t.co.uk**

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- 1 INTRODUCTION
- 2 KEY TO ABBREVIATIONS
- 3 SUMMARY OF RESULTS
- 4 DIAGRAM INDICATING TEST POSITIONS

APPENDIX 1 – INDIVIDUAL EXPOSURE ASSESSMENTS

APPENDIX 2 – INSTRUMENT CALIBRATION CERTIFICATES

PERSONNEL DETAILS

CLIENT CONTACT : MR R NEWTON
TESTING PERSONNEL : KEVIN MORRIS
DATE OF TESTING : 15TH – 19TH SEPTEMBER 2025
REPORT WRITTEN BY : KEVIN MORRIS


.....

1 INTRODUCTION

Dukeries Environmental Testing were commissioned by FFC Environment to undertake occupational exposure monitoring during routine operations at the Blackburn Meadows waste treatment works during normal operations. Sampling was carried out over a five day period during normal waste processing operations.

The following report outlines the work undertaken and summarises any recommendations arising from the monitoring results.

2 KEY TO ABBREVIATIONS AND METHODOLOGY

Monitoring to determine the airborne concentration of Total Inhalable and Respirable dust was carried out using Casella Apex Pro battery-operated pumps set to draw air at a rate of 2 litres per minute through a 25mm Glass fibre filter plus a respirable selecting foam loaded into an 'IOM' (open-faced) filter holders. The samples are subsequently analysed gravimetrically to determine the airborne concentration of Total Inhalable and Respirable dust collected. Three unexposed filters were also sent for analysis as a quality control blanks.

Monitoring to determine airborne concentrations of metallic elements contained within atmospheric particulates was carried out using Casella Apex Pro battery-operated sampling pumps set to draw air through a 25mm mixed cellulose ester (MCE) membrane filter loaded into an 'IOM' (open-faced) filter holder calibrated to a flow rate of 2 litres per minute. The samples were subsequently analysed by means of Inductively Coupled Plasma / Atomic Emission Spectroscopy.

Personal monitoring for organic vapours was carried out using the SKC battery-operated pocket pumps set to draw air through an activated charcoal tube at a rate of 200 millilitres per minute over an extended test period. The samples are subsequently analysed with solvent desorption and analysis using Gas Chromatography with a Flame Ionisation Detector.

The sampling head was attached to the collar of an operative to obtain samples from the breathing zone for personal sampling or mounted on a tripod 1.5m high for static area sampling. Sampling was carried out for approximately a six hour period and the start and stop times were recorded. The pumps were calibrated using a Chek-Mate electronic flow meter. This was carried out every hour during the sampling period.

Specific values quoted in air sampling results are taken from Health and Safety Executive guidance note EH40/2005 : Workplace Exposure Limits 2005.

mgm ⁻³	:	milligrams substance(s) per cubic metre
WELs	:	Workplace Exposure Limits
TWA	:	Time Weighted Average – This relates to the procedure whereby the occupational exposures in any 24-hour period are treated as equivalent to a single uniform exposure for 8 hours (the 8-hour time weighted average (TWA) exposure)
MDHS 14/4	:	HSE Method 14/4 – Gravimetric Determination of Total Inhalable and Respirable Dust.
NIOSH 7300	:	Determination of metallic elements by means of Inductively Coupled Plasma / Atomic Emission Spectroscopy
MDHS96	:	Collection on activated charcoal with subsequent solvent desorption and analysis using Gas Chromatography with a Flame Ionisation Detector.

3.1 SUMMARY OF RESULTS – 15TH SEPT 2025

TEST No.	TEST DETAILS	SUBSTANCE MONITORED	RESULT 8 ^{HR} TWA (mgm ⁻³)	WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
1	Test position No.1 - Front corner of Bunker No.5 near the ash silo feed	Total Inhalable Dust Respirable Dust	6.68 0.47	10 4.0
2	Test position No.2 - Near shredding machine	Total Inhalable Dust Respirable Dust	6.21 0.42	10 4.0
3	Test Position No.3 – Inside the cab of the CAT 320GC excavator. Turning waste in the bunker	Total Inhalable Dust Respirable Dust	1.08 0.19	10 4.0
4	Personal sample undertaken on T Naylor . Carrying out normal site waste processing operations	Total Inhalable Dust Respirable Dust	4.71 0.41	10 4.0
5	Test position No.1 - Front corner of Bunker No.5 near the ash silo feed	Arsenic Cadmium Chromium Copper Lead Nickel Tin	< 0.0001 0.0001 < 0.0007 < 0.0007 < 0.0013 < 0.0013 < 0.0004	0.1 0.025 0.5 1.0 0.15 0.5 2.0
6	Personal sample undertaken on L Martin . Working within the laboratory & processing waste chemicals on site	Benzene Butyl acetate Diethyl Ether Ethylbenzene Propan-2-ol Tetrachloroethylene Toluene Trichloroethylene Xylene	< 0.0066 0.029 < 0.066 0.013 0.062 < 0.013 0.023 < 0.013 0.045	3.25 724 310 441 999 138 191 550 220
7	Personal sample undertaken on W Hudson . Working within the laboratory & processing waste chemicals on site	Benzene Butyl acetate Diethyl Ether Ethylbenzene Propan-2-ol Tetrachloroethylene Toluene Trichloroethylene Xylene	< 0.0066 0.086 < 0.0066 0.13 0.091 < 0.013 0.12 < 0.013 0.47	3.25 724 310 441 999 138 191 550 220
8	Personal sample undertaken on M Crowley . Working within yard processing waste chemicals on site	Benzene Butyl acetate Diethyl Ether Ethylbenzene Propan-2-ol Tetrachloroethylene Toluene Trichloroethylene Xylene	< 0.0066 0.032 < 0.0066 0.19 0.15 0.053 0.12 < 0.013 0.069	3.25 724 310 441 999 138 191 550 220



Below 50% of the WEL



Above 50% of the WEL



Above the WEL

3.2 SUMMARY OF RESULTS – 16TH SEPT 2025

TEST No.	TEST DETAILS	SUBSTANCE MONITORED	RESULT 8 ^{HR} TWA (mgm ⁻³)	WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
9	Test position No.1 - Front corner of Bunker No.5 near the ash silo feed	Total Inhalable Dust Respirable Dust	7.76 0.55	10 4.0
10	Test position No.2 - Near shredding machine	Total Inhalable Dust Respirable Dust	7.40 0.51	10 4.0
11	Test Position No.3 – Inside the cab of the CAT 320GC excavator. Turning waste in the bunker	Total Inhalable Dust Respirable Dust	1.04 0.17	10 4.0
12	Personal sample undertaken on T Naylor . Carrying out normal site waste processing operations.	Total Inhalable Dust Respirable Dust	5.56 0.47	10 4.0
13	Test position No.1 - Front corner of Bunker No.5 near the ash silo feed	Arsenic Cadmium Chromium Copper Lead Nickel Tin	<0.0001 0.0001 <0.0007 <0.0007 <0.0013 <0.0013 <0.0004	0.1 0.025 0.5 1.0 0.15 0.5 2.0
14	Personal sample undertaken on A Chafen . Working within yard processing waste chemicals on site	Benzene Butyl acetate Diethyl Ether Ethylbenzene Propan-2-ol Tetrachloroethylene Toluene Trichloroethylene Xylene	<0.0066 0.016 <0.066 0.036 0.14 <0.013 0.15 <0.013 0.12	3.25 724 310 441 999 138 191 550 220
15	Personal sample undertaken on W Hudson . Working within the laboratory & processing waste chemicals on site	Benzene Butyl acetate Diethyl Ether Ethylbenzene Propan-2-ol Tetrachloroethylene Toluene Trichloroethylene Xylene	<0.0066 0.016 <0.066 0.019 0.10 0.041 0.029 <0.013 0.076	3.25 724 310 441 999 138 191 550 220
16	Personal sample undertaken on M Crowley . Working within yard processing waste chemicals on site	Benzene Butyl acetate Diethyl Ether Ethylbenzene Propan-2-ol Tetrachloroethylene Toluene Trichloroethylene Xylene	<0.0066 0.14 <0.066 0.37 0.34 <0.013 0.32 0.31 1.5	3.25 724 310 441 999 138 191 550 220



Below 50% of the WEL



Above 50% of the WEL



Above the WEL

3.3 SUMMARY OF RESULTS – 17TH SEPT 2025

TEST No.	TEST DETAILS	SUBSTANCE MONITORED	RESULT 8 ^{HR} TWA (mgm ⁻³)	WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
17	Test position No.1 - Front corner of Bunker No.5 near the ash silo feed	Total Inhalable Dust Respirable Dust	5.38 0.34	10 4.0
18	Test position No.2 - Near shredding machine	Total Inhalable Dust Respirable Dust	4.46 0.37	10 4.0
19	Test Position No.3 – Inside the cab of the CAT 320GC excavator. Turning waste in the bunker	Total Inhalable Dust Respirable Dust	0.78 0.13	10 4.0
20	Personal sample undertaken on T Naylor . Carrying out normal site waste processing operations	Total Inhalable Dust Respirable Dust	6.55 0.45	10 4.0
21	Test position No.1 - Front corner of Bunker No.5 near the ash silo feed	Arsenic Cadmium Chromium Copper Lead Nickel Tin	< 0.0001 0.0002 < 0.0007 0.0010 < 0.0013 < 0.0013 < 0.0004	0.1 0.025 0.5 1.0 0.15 0.5 2.0
22	Personal sample undertaken on M Crowley . Working within yard processing waste chemicals on site	Benzene Butyl acetate Diethyl Ether Ethylbenzene Propan-2-ol Tetrachloroethylene Toluene Trichloroethylene Xylene	0.0071 0.10 < 0.066 0.35 0.095 < 0.013 0.19 < 0.013 1.1	3.25 724 310 441 999 138 191 550 220
23	Personal sample undertaken on W Hudson . Working within the laboratory & processing waste chemicals on site	Benzene Butyl acetate Diethyl Ether Ethylbenzene Propan-2-ol Tetrachloroethylene Toluene Trichloroethylene Xylene	< 0.0066 0.031 < 0.066 0.022 0.13 0.052 0.026 < 0.013 0.075	3.25 724 310 441 999 138 191 550 220
24	Personal sample undertaken on A Chafen . Working within yard processing waste chemicals on site	Benzene Butyl acetate Diethyl Ether Ethylbenzene Propan-2-ol Tetrachloroethylene Toluene Trichloroethylene Xylene	< 0.0066 0.038 < 0.066 7.3 0.11 < 0.013 0.026 < 0.013 28	3.25 724 310 441 999 138 191 550 220



Below 50% of the WEL



Above 50% of the WEL



Above the WEL

3.4 SUMMARY OF RESULTS – 18TH SEPT 2025

TEST No.	TEST DETAILS	SUBSTANCE MONITORED	RESULT 8 ^{HR} TWA (mgm ⁻³)	WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
25	Test position No.1 - Front corner of Bunker No.5 near the ash silo feed	Total Inhalable Dust Respirable Dust	7.22 0.52	10 4.0
26	Test position No.2 - Near shredding machine	Total Inhalable Dust Respirable Dust	7.15 0.46	10 4.0
27	Test Position No.3 – Inside the cab of the CAT 320GC excavator. Turning waste in the bunker	Total Inhalable Dust Respirable Dust	1.49 0.22	10 4.0
28	Personal sample undertaken on T Naylor . Carrying out normal site waste processing operations	Total Inhalable Dust Respirable Dust	5.51 0.42	10 4.0
29	Test position No.1 - Front corner of Bunker No.5 near the ash silo feed	Arsenic Cadmium Chromium Copper Lead Nickel Tin	<0.0001 0.0002 <0.0006 0.0007 <0.0013 <0.0013 <0.0004	0.1 0.025 0.5 1.0 0.15 0.5 2.0
30	Personal sample undertaken on A Morton . Working within the laboratory & processing waste chemicals on site	Benzene Butyl acetate Diethyl Ether Ethylbenzene Propan-2-ol Tetrachloroethylene Toluene Trichloroethylene Xylene	<0.0064 0.085 <0.064 0.027 0.098 <0.013 0.10 <0.013 0.089	3.25 724 310 441 999 138 191 550 220
31	Personal sample undertaken on L Martin . Working within the laboratory & processing waste chemicals on site	Benzene Butyl acetate Diethyl Ether Ethylbenzene Propan-2-ol Tetrachloroethylene Toluene Trichloroethylene Xylene	<0.0064 0.041 <0.064 0.0068 <0.026 <0.013 <0.0064 <0.013 0.026	3.25 724 310 441 999 138 191 550 220
32	Personal sample undertaken on M Crowley . Working within yard processing waste chemicals on site	Benzene Butyl acetate Diethyl Ether Ethylbenzene Propan-2-ol Tetrachloroethylene Toluene Trichloroethylene Xylene	<0.0065 0.20 <0.065 0.074 0.053 <0.013 0.14 <0.013 0.26	3.25 724 310 441 999 138 191 550 220



Below 50% of the WEL



Above 50% of the WEL



Above the WEL

3.5 SUMMARY OF RESULTS – 19TH SEPT 2025

TEST No.	TEST DETAILS	SUBSTANCE MONITORED	RESULT 8 ^{HR} TWA (mgm ⁻³)	WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
33	Test position No.1 - Front corner of Bunker No.5 near the ash silo feed	Total Inhalable Dust Respirable Dust	8.77 0.59	10 4.0
34	Test position No.2 - Near shredding machine	Total Inhalable Dust Respirable Dust	7.45 0.44	10 4.0
35	Test Position No.3 – Inside the cab of the CAT 320GC excavator. Turning waste in the bunker	Total Inhalable Dust Respirable Dust	0.71 0.15	10 4.0
36	Personal sample undertaken on T Naylor . Carrying out normal site waste processing operations	Total Inhalable Dust Respirable Dust	7.87 0.52	10 4.0
37	Test position No.1 - Front corner of Bunker No.5 near the ash silo feed	Arsenic Cadmium Chromium Copper Lead Nickel Tin	<0.0001 <0.0001 <0.0006 <0.0006 <0.0012 <0.0012 <0.0004	0.1 0.025 0.5 1.0 0.15 0.5 2.0
38	Personal sample undertaken on L Martin . Working within the laboratory & processing waste chemicals on site	Benzene Butyl acetate Diethyl Ether Ethylbenzene Propan-2-ol Tetrachloroethylene Toluene Trichloroethylene Xylene	<0.0064 0.36 <0.064 0.034 0.095 <0.013 0.014 <0.013 0.14	3.25 724 310 441 999 138 191 550 220
39	Personal sample undertaken on A Chafen . Working within the laboratory & processing waste chemicals on site	Benzene Butyl acetate Diethyl Ether Ethylbenzene Propan-2-ol Tetrachloroethylene Toluene Trichloroethylene Xylene	<0.0066 0.12 <0.066 0.030 <0.026 0.061 0.033 <0.013 0.11	3.25 724 310 441 999 138 191 550 220
40	Personal sample undertaken on M Crowley . Working within yard processing waste chemicals on site	Benzene Butyl acetate Diethyl Ether Ethylbenzene Propan-2-ol Tetrachloroethylene Toluene Trichloroethylene Xylene	0.0072 0.50 <0.060 0.26 0.10 <0.013 0.21 <0.013 0.95	3.25 724 310 441 999 138 191 550 220



Below 50% of the WEL

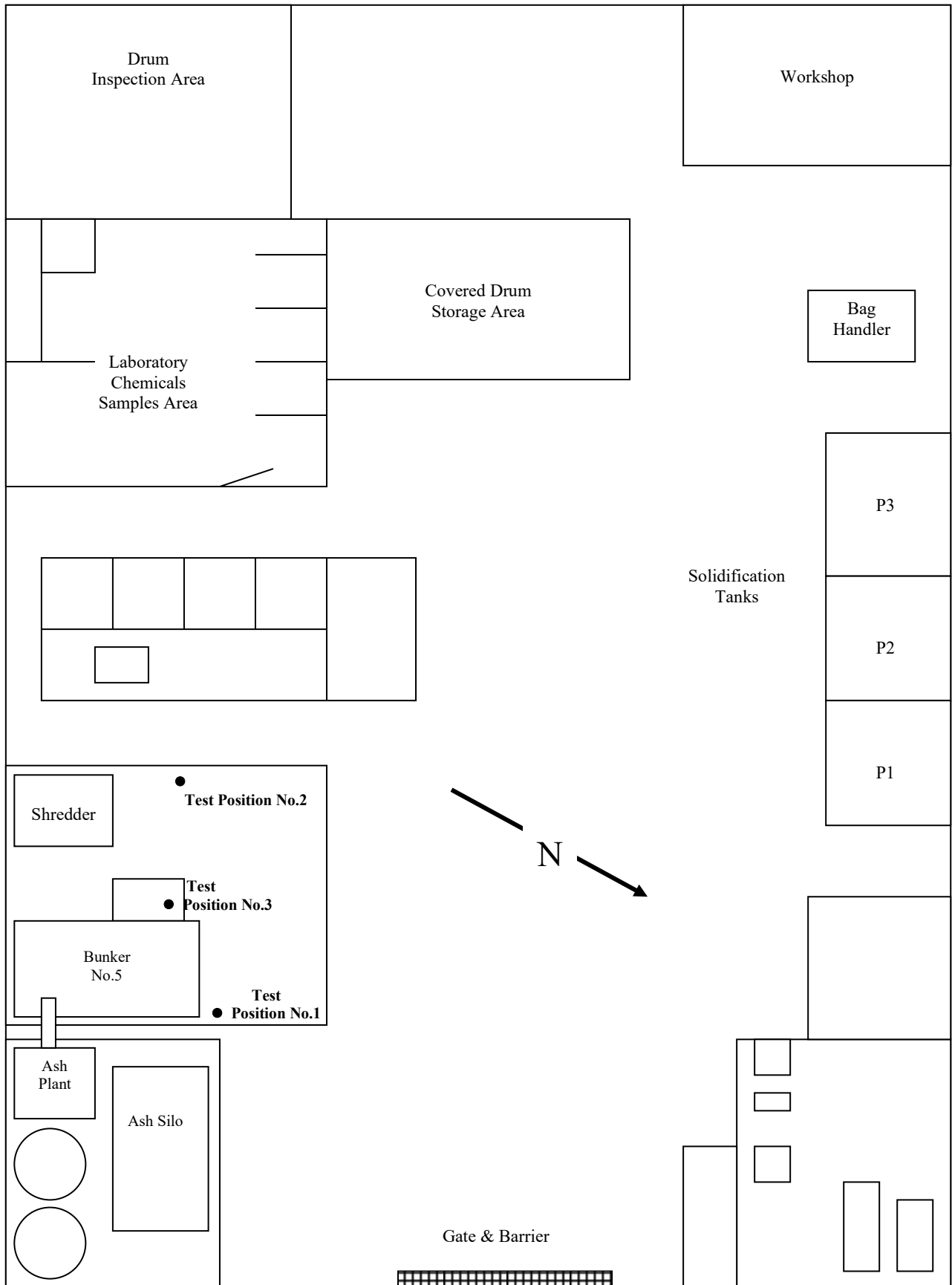


Above 50% of the WEL



Above the WEL

4. FCC ENVIRONMENT BLACKBURN MEADOWS



APPENDIX 1

INDIVIDUAL EXPOSURE ASSESSMENTS

APPENDIX 1

INDIVIDUAL EXPOSURE ASSESSMENTS

JOB REFERENCE	250906	DATE OF TEST	15-09-25
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DETAILS OF OPERATION							
Test position No.1 - Front corner of Bunker No.5 near the ash silo feed (1.5 meters high) (See diagram indicating test Positions on Page 5)							
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE	
				START	FINISH		
1	250906/01	381	762	08.10	14.31	Static	
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)	
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		6.68 mgm⁻³ 0.47 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0	
OBSERVATION & RECOMMENDATIONS							
<p>During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5. A significant amount of airborne dust is present during normal waste loading & mixing operations.</p> <p>Although the measured airborne levels of Total Inhalable Dust undertaken near to the front corner of bunker No.5 were found to be below the 10mgm⁻³ limit, the measured levels should be deemed as significant due to the measured levels being above 50% of the WEL. On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.</p> <p>It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.</p> <p>The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.</p> <p>WEATHER CONDITIONS DURING THE TEST PERIOD: Overcast & dry underfoot. Temperature : 15°C. Relative Humidity : 65% Average wind speed: 4.0 m/s South Westerly.</p>							
FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES		
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6065 RF/4127	IOM 01	INITIAL	2000	ON	OFF	
			FINAL	2000			
			AVERAGE	2000			
PUMP NR.	NAME OF SAMPLING TECHNICIAN					08.10	14.31
AP 01	KEVIN MORRIS						

JOB REFERENCE	250906	DATE OF TEST	15-09-25
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DETAILS OF OPERATION						
Test position No.2 - Near shredding machine (1.5 meters high) (See diagram indicating test Positions on Page 5)						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
2	250906/02	381	762	08.12	14.33	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		6.21 mgm⁻³ 0.42 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0
OBSERVATION & RECOMMENDATIONS						
<p>During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5. A significant amount of airborne dust is present during normal waste loading & mixing operations.</p> <p>Although the measured airborne levels of Total Inhalable Dust undertaken near to the shredding machine were found to be below the 10mgm⁻³ limit, the measured levels should be deemed as significant due to the measured levels being above 50% of the WEL. On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.</p> <p>It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.</p> <p>The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.</p> <p>WEATHER CONDITIONS DURING THE TEST PERIOD: Overcast & dry underfoot. Temperature : 15°C. Relative Humidity : 65% Average wind speed: 4.0 m/s South Westerly.</p>						
FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6066 RF/4128	IOM 02	INITIAL	2000	08.12	14.33
			FINAL	2000		
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 02	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	15-09-25
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DETAILS OF OPERATION

Test Position No.3 – Inside the cab of the CAT 320GC excavator. Turning waste in the bunker
(See diagram indicating test Positions on Page 5)

TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
3	250906/03	376	752	08.14	14.30	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		1.08 mgm⁻³ 0.19 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0

OBSERVATION & RECOMMENDATIONS

The measured airborne dust levels were found to be well below the workplace exposure limits. During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5.

It is recommended that all drivers keep the windows of the vehicle closed during loading/mixing operations & that the air inlet filters are changed or replaced on a regular basis during servicing in order to reduce the amount of airborne dust entering the vehicle cab.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

WEATHER CONDITIONS DURING THE TEST PERIOD:

Overcast & dry underfoot. Temperature : 15°C. Relative Humidity : 65%
Average wind speed: 4.0 m/s South Westerly.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6067 RF/34129	IOM 03	INITIAL	2000	08.14	14.30
			FINAL	2000		
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 03	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	15-09-25
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DETAILS OF OPERATION						
Personal sample undertaken on T Naylor . Carrying out normal site waste processing operations						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
4	250906/04	378	756	08.07	14.25	Personal
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		4.71 mgm⁻³ 0.41 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0

OBSERVATION & RECOMMENDATIONS

On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of ‘normal’ exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

During the test period approximately 20 - 25 tons of ash loaded into bunker No.5

WEATHER CONDITIONS DURING THE TEST PERIOD:
Overcast & dry underfoot. Temperature : 15°C. Relative Humidity : 65%
Average wind speed: 4.0 m/s South Westerly.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6068 RF/4130	IOM 04	INITIAL	2000	08.07	14.25
			FINAL	2000		
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 04	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	15-09-25
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DETAILS OF OPERATION

**Test position No.1 - Front corner of Bunker No.5 near the ash silo feed (1.5 meters high)
(See diagram indicating test Positions on Page 5)**

TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
5	250906/05	381	762	08.10	14.31	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Arsenic		NIOSH 7300		<0.0001		0.1
Cadmium		NIOSH 7300		0.0001		0.025
Chromium		NIOSH 7300		<0.0007		0.5
Copper		NIOSH 7300		<0.0007		1.0
Lead		NIOSH 7300		<0.0013		0.15
Nickel		NIOSH 7300		<0.0013		0.5
Tin		NIOSH 7300		<0.0004		2.0

OBSERVATION & RECOMMENDATIONS

During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5. Although a significant amount of airborne dust is present during normal waste loading & mixing operations the measured airborne levels of heavy metals were found to be below the workplace exposure limits. On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

WEATHER CONDITIONS DURING THE TEST PERIOD:

Overcast & dry underfoot. Temperature : 15°C. Relative Humidity : 65%
Average wind speed: 4.0 m/s South Westerly.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
			INITIAL	2000	ON	OFF
25MM MCE FILTER	25-94093-005	T101	FINAL	2000	08.10	14.31
			AVERAGE	2000		
			PUMP NR.			
AP 05	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	15-09-25
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DETAILS OF OPERATION

Personal sample undertaken on **L Martin**. Working within the laboratory & processing waste chemicals on site

TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
6	250906/06	379	75.8	08.08	14.27	Personal
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Benzene		GC/FID		<0.0066		3.25
Butyl acetate		GC/FID		0.029		724
Diethyl Ether		GC/FID		<0.066		310
Ethylbenzene		GC/FID		0.013		441
Propan-2-ol		GC/FID		0.062		999
Tetrachloroethylene		GC/FID		<0.013		138
Toluene		GC/FID		0.023		191
Trichloroethylene		GC/FID		<0.013		550
Xylene		GC/FID		0.045		220

OBSERVATION & RECOMMENDATIONS

All of the measured levels were found to be below the workplace exposure limits.

On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne solvents will also fluctuate. It is therefore recommended that suitable respiratory protective equipment (RPE) is made available for all staff to wear when processing waste.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
ACTIVATED CHARCOAL TUBE 226-01	25-94093-001	---	INITIAL	200	08.08	ON
			FINAL	200		OFF
			AVERAGE	200		14.27
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
PP01	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	15-09-25
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DETAILS OF OPERATION

Personal sample undertaken on **W Hudson**. Working within the laboratory & processing waste chemicals on site

TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
7	250906/07	379	75.8	08.05	14.27	Personal

SUBSTANCE MEASURED	METHOD	RESULT 8 ^{HR} TWA	WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Benzene	GC/FID	<0.0066	3.25
Butyl acetate	GC/FID	0.086	724
Diethyl Ether	GC/FID	<0.0066	310
Ethylbenzene	GC/FID	0.13	441
Propan-2-ol	GC/FID	0.091	999
Tetrachloroethylene	GC/FID	<0.013	138
Toluene	GC/FID	0.12	191
Trichloroethylene	GC/FID	<0.013	550
Xylene	GC/FID	0.47	220

OBSERVATION & RECOMMENDATIONS

All of the measured levels were found to be below the workplace exposure limits.

On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne solvents will also fluctuate. It is therefore recommended that suitable respiratory protective equipment (RPE) is made available for all staff to wear when processing waste.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
ACTIVATED CHARCOAL TUBE 226-01	25-94093-002	---	INITIAL	200	08.08	ON
			FINAL	200		OFF
			AVERAGE	200		14.27
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
PP02	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	15-09-25
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DETAILS OF OPERATION						
Personal sample undertaken on W Hudson . Working within the yard processing waste chemicals on site						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
8	250906/08	376	75.2	08.09	14.25	Personal
SUBSTANCE MEASURED			METHOD		RESULT 8 ^{HR} TWA	WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Benzene			GC/FID		<0.0066	3.25
Butyl acetate			GC/FID		0.032	724
Diethyl Ether			GC/FID		<0.0066	310
Ethylbenzene			GC/FID		0.19	441
Propan-2-ol			GC/FID		0.15	999
Tetrachloroethylene			GC/FID		0.053	138
Toluene			GC/FID		0.12	191
Trichloroethylene			GC/FID		<0.013	550
Xylene			GC/FID		0.069	220

OBSERVATION & RECOMMENDATIONS

All of the measured levels were found to be below the workplace exposure limits.

On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne solvents will also fluctuate. It is therefore recommended that suitable respiratory protective equipment (RPE) is made available for all staff to wear when processing waste in the lab smalls building.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
ACTIVATED CHARCOAL TUBE 226-01	25-94093-003	---	INITIAL	200	ON	OFF
			FINAL	200		
			AVERAGE	200	08.09	14.25
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
PP03	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	16-09-25
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DETAILS OF OPERATION

**Test position No.1 - Front corner of Bunker No.5 near the ash silo feed (1.5 meters high)
(See diagram indicating test Positions on Page 5)**

TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
9	250906/09	382	764	08.07	14.29	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		7.76 mgm⁻³ 0.55 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0

OBSERVATION & RECOMMENDATIONS

During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5. A significant amount of airborne dust is present during normal waste loading & mixing operations.

Although the measured airborne levels of Total Inhalable Dust undertaken near to the front corner of bunker No.5 were found to be below the 10mgm⁻³ limit, the measured levels should be deemed as significant due to the measured levels being above 50% of the WEL. On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

WEATHER CONDITIONS DURING THE TEST PERIOD:

Sunny & dry underfoot. Temperature : 17°C. Relative Humidity : 62%

Average wind speed: 3.0 m/s South Westerly.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/56069 RF/4131	IOM 01	INITIAL	2000	08.07	14.29
			FINAL	2000		
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 01	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	16-09-25
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DETAILS OF OPERATION						
Test position No.2 - Near shredding machine (1.5 meters high) (See diagram indicating test Positions on Page 5)						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
10	250906/10	379	758	08.08	14.27	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		7.40 mgm⁻³ 0.51 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0
OBSERVATION & RECOMMENDATIONS						
<p>During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5. A significant amount of airborne dust is present during normal waste loading & mixing operations.</p> <p>Although the measured airborne levels of Total Inhalable Dust undertaken near to the shredding machine were found to be below the 10mgm⁻³ limit, the measured levels should be deemed as significant due to the measured levels being above 50% of the WEL. On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.</p> <p>It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.</p> <p>The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.</p> <p>WEATHER CONDITIONS DURING THE TEST PERIOD: Sunny & dry underfoot. Temperature : 17°C. Relative Humidity : 62% Average wind speed: 3.0 m/s South Westerly.</p>						
FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6070 RF/4132	IOM 02	INITIAL	2000	ON	OFF
			FINAL	2000	08.08	14.27
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 02	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	16-09-25
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DETAILS OF OPERATION

Test Position No.3 – Inside the cab of the CAT 320GC excavator. Turning waste in the bunker
(See diagram indicating test Positions on Page 5)

TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
11	250906/11	375	750	08.11	14.26	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		1.04 mgm⁻³ 0.17 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0

OBSERVATION & RECOMMENDATIONS

The measured airborne dust levels were found to be well below the workplace exposure limits. During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5.

It is recommended that all drivers keep the windows of the vehicle closed during loading/mixing operations & that the air inlet filters are changed or replaced on a regular basis during servicing in order to reduce the amount of airborne dust entering the vehicle cab.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

WEATHER CONDITIONS DURING THE TEST PERIOD:

Sunny & dry underfoot. Temperature : 17°C. Relative Humidity : 62%
Average wind speed: 3.0 m/s South Westerly.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6071 RF/4133	IOM 03	INITIAL	2000	08.11	14.26
			FINAL	2000		
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 03	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	16-09-25
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DETAILS OF OPERATION						
Personal sample undertaken on T Naylor . Carrying out normal site waste processing operations.						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
12	250906/12	374	748	08.14	14.28	Personal
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		5.56 mgm⁻³ 0.47 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0

OBSERVATION & RECOMMENDATIONS

Although the measured airborne levels of Total Inhalable Dust undertaken were found to be below the 10mgm⁻³ limit, the measured levels should be deemed as significant due to the measured levels being above 50% of the WEL. On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of ‘normal’ exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

During the test period 20 - 25 tons of ash loaded into bunker No.5

WEATHER CONDITIONS DURING THE TEST PERIOD:

Sunny & dry underfoot. Temperature : 17°C. Relative Humidity : 62%
Average wind speed: 3.0 m/s South Westerly.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6072 RF/4134	IOM 04	INITIAL	2000	ON	OFF
			FINAL	2000	08.14	14.28
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 04	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	16-09-25
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DETAILS OF OPERATION

**Test position No.1 - Front corner of Bunker No.5 near the ash silo feed (1.5 meters high)
(See diagram indicating test Positions on Page 5)**

TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
13	250906/13	382	762	08.07	14.29	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA	WORKPLACE EXPOSURE LIMIT (mgm ⁻³)	
Arsenic		NIOSH 7300		<0.0001	0.1	
Cadmium		NIOSH 7300		0.0001	0.025	
Chromium		NIOSH 7300		<0.0007	0.5	
Copper		NIOSH 7300		<0.0007	1.0	
Lead		NIOSH 7300		<0.0013	0.15	
Nickel		NIOSH 7300		<0.0013	0.5	
Tin		NIOSH 7300		<0.0004	2.0	

OBSERVATION & RECOMMENDATIONS

During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5. Although a significant amount of airborne dust is present during normal waste loading & mixing operations the measured airborne levels of heavy metals were found to be below the workplace exposure limits. On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

WEATHER CONDITIONS DURING THE TEST PERIOD:

Sunny & dry underfoot. Temperature : 17°C. Relative Humidity : 62%
Average wind speed: 3.0 m/s South Westerly.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MM MCE FILTER	25-94093-018	T101	INITIAL	2000	ON	OFF
			FINAL	2000	08.07	14.29
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 05	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	16-09-25
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DETAILS OF OPERATION						
Personal sample undertaken on A Chafen . Working within yard processing waste chemicals on site						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
14	250906/14	376	75.2	08.16	14.32	Personal
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Benzene		GC/FID		<0.0066		3.25
Butyl acetate		GC/FID		0.016		724
Diethyl Ether		GC/FID		<0.066		310
Ethylbenzene		GC/FID		0.036		441
Propan-2-ol		GC/FID		0.14		999
Tetrachloroethylene		GC/FID		<0.013		138
Toluene		GC/FID		0.15		191
Trichloroethylene		GC/FID		<0.013		550
Xylene		GC/FID		0.12		220

OBSERVATION & RECOMMENDATIONS

All of the measured levels were found to be below the workplace exposure limits.

On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne solvents will also fluctuate. It is therefore recommended that suitable respiratory protective equipment (RPE) is made available for all staff to wear when processing waste.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
ACTIVATED CHARCOAL TUBE 226-01	25-94093-004	---	INITIAL	200	08.16	ON
			FINAL	200		14.32
			AVERAGE	200		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
PP01	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	16-09-25
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DETAILS OF OPERATION

Personal sample undertaken on **W Hudson**. Working within the laboratory & processing waste chemicals on site

TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
15	250906/15	376	75.2	08.16	14.32	Personal
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Benzene		GC/FID		<0.0066		3.25
Butyl acetate		GC/FID		0.016		724
Diethyl Ether		GC/FID		<0.066		310
Ethylbenzene		GC/FID		0.019		441
Propan-2-ol		GC/FID		0.10		999
Tetrachloroethylene		GC/FID		0.041		138
Toluene		GC/FID		0.029		191
Trichloroethylene		GC/FID		<0.013		550
Xylene		GC/FID		0.076		220

OBSERVATION & RECOMMENDATIONS

All of the measured levels were found to be below the workplace exposure limits.

On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne solvents will also fluctuate. It is therefore recommended that suitable respiratory protective equipment (RPE) is made available for all staff to wear when processing waste.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
ACTIVATED CHARCOAL TUBE 226-01	25-94093-005	---	INITIAL	200	08.16	ON
			FINAL	200		OFF
			AVERAGE	200		14.32
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
PP02	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	16-09-25
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DETAILS OF OPERATION

Personal sample undertaken on **M Crowley**. Working within yard processing waste chemicals on site

TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
16	250906/16	377	75.4	08.16	14.33	Personal

SUBSTANCE MEASURED	METHOD	RESULT 8 ^{HR} TWA	WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Benzene	GC/FID	<0.0066	3.25
Butyl acetate	GC/FID	0.14	724
Diethyl Ether	GC/FID	<0.066	310
Ethylbenzene	GC/FID	0.37	441
Propan-2-ol	GC/FID	0.34	999
Tetrachloroethylene	GC/FID	<0.013	138
Toluene	GC/FID	0.32	191
Trichloroethylene	GC/FID	0.31	550
Xylene	GC/FID	1.5	220

OBSERVATION & RECOMMENDATIONS

All of the measured levels were found to be below the workplace exposure limits.

On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne solvents will also fluctuate. It is therefore recommended that suitable respiratory protective equipment (RPE) is made available for all staff to wear when processing waste in the lab smalls building.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
ACTIVATED CHARCOAL TUBE 226-01	25-94093-006	---	INITIAL	200	08.16	14.33
			FINAL	200		
			AVERAGE	200		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
PP03	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	17-09-25
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DETAILS OF OPERATION

**Test position No.1 - Front corner of Bunker No.5 near the ash silo feed (1.5 meters high)
(See diagram indicating test Positions on Page 5)**

TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
17	250906/17	381	76.2	08.06	14.27	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		5.38 mgm⁻³ 0.34 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0

OBSERVATION & RECOMMENDATIONS

During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5. A significant amount of airborne dust is present during normal waste loading & mixing operations.

Although the measured airborne levels of Total Inhalable Dust undertaken near to the front corner of bunker No.5 were found to be below the 10mgm⁻³ limit, the measured levels should be deemed as significant due to the measured levels being above 50% of the WEL.. On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

WEATHER CONDITIONS DURING THE TEST PERIOD:

Rain showers & wet underfoot. Temperature : 17°C. Relative Humidity :75%
Average wind speed: 2.0 m/s South Westerly.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6073 RF/4135	IOM 01	INITIAL	2000	08.06	ON
			FINAL	2000		OFF
			AVERAGE	2000		14.27
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 01	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	17-09-25
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DETAILS OF OPERATION						
Test position No.2 - Near shredding machine (1.5 meters high) (See diagram indicating test Positions on Page 5)						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
18	250906/18	381	762	08.07	14.28	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		4.46 mgm⁻³ 0.37 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0
OBSERVATION & RECOMMENDATIONS						
<p>During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5. A significant amount of airborne dust is present during normal waste loading & mixing operations.</p> <p>On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.</p> <p>It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.</p> <p>The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.</p> <p>WEATHER CONDITIONS DURING THE TEST PERIOD: Rain showers & wet underfoot. Temperature : 17°C. Relative Humidity :755% Average wind speed: 2.0 m/s South Westerly.</p>						
FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6074 RF/4136	IOM 02	INITIAL	2000	ON	OFF
			FINAL	2000		
			AVERAGE	2000		
PUMP NR.		NAME OF SAMPLING TECHNICIAN				
AP 02		KEVIN MORRIS				

JOB REFERENCE	250906	DATE OF TEST	17-09-25
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DETAILS OF OPERATION

Test Position No.3 – Inside the cab of the CAT 320GC excavator. Turning waste in the bunker
(See diagram indicating test Positions on Page 5)

TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
19	250906/19	378	756	08.10	14.28	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		0.78 mgm⁻³ 0.13 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0

OBSERVATION & RECOMMENDATIONS

The measured airborne dust levels were found to be well below the workplace exposure limits. During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5.

It is recommended that all drivers keep the windows of the vehicle closed during loading/mixing operations & that the air inlet filters are changed or replaced on a regular basis during servicing in order to reduce the amount of airborne dust entering the vehicle cab.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

WEATHER CONDITIONS DURING THE TEST PERIOD:
 Rain showers & wet underfoot. Temperature : 17°C. Relative Humidity :75%
 Average wind speed: 2.0 m/s South Westerly.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6075 RF/4137	IOM 03	INITIAL	2000	ON	OFF
			FINAL	2000	08.10	14.28
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 03	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	17-09-25
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DETAILS OF OPERATION						
Personal sample undertaken on T Naylor . Carrying out normal site waste processing operations						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
20	250906/20	386	772	08.03	14.29	Personal
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		6.55 mgm⁻³ 0.45 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0
OBSERVATION & RECOMMENDATIONS						
<p>Although the measured airborne levels of Total Inhalable Dust undertaken were found to be below the 10mgm⁻³ limit, the measured levels should be deemed as significant due to the measured levels being above 50% of the WEL. On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.</p> <p>It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.</p> <p>The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.</p> <p>During the test period 20 - 25 tons of ash loaded into bunker No.5</p> <p>WEATHER CONDITIONS DURING THE TEST PERIOD: Sunny & dry underfoot. Temperature : 22°C. Relative Humidity : 55% Average wind speed: 1.5 m/s South Westerly.</p>						
FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6076 RF/4138	IOM 04	INITIAL	2000	08.03	ON
			FINAL	2000		14.29
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 04	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	17-09-25
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DETAILS OF OPERATION

**Test position No.1 - Front corner of Bunker No.5 near the ash silo feed (1.5 meters high)
(See diagram indicating test Positions on Page 5)**

TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
21	250906/21	381	762	08.06	14.27	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Arsenic		NIOSH 7300		<0.0001		0.1
Cadmium		NIOSH 7300		0.0002		0.025
Chromium		NIOSH 7300		<0.0007		0.5
Copper		NIOSH 7300		0.0010		1.0
Lead		NIOSH 7300		<0.0013		0.15
Nickel		NIOSH 7300		<0.0013		0.5
Tin		NIOSH 7300		<0.0004		2.0

OBSERVATION & RECOMMENDATIONS

During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5. Although a significant amount of airborne dust is present during normal waste loading & mixing operations the measured airborne levels of heavy metals were found to be below the workplace exposure limits. On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

WEATHER CONDITIONS DURING THE TEST PERIOD:

Rain showers & wet underfoot. Temperature : 17°C. Relative Humidity :75%
Average wind speed: 2.0 m/s South Westerly.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MM MCE FILTER	25-94093-019	T101	INITIAL	2000	ON	OFF
			FINAL	2000		
			AVERAGE	2000	08.06	14.27
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 05	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	17-09-25
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DETAILS OF OPERATION						
Personal sample undertaken on M Crowley . Working within the laboratory & processing waste chemicals on site						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
22	250906/22	381	76.2	08.04	14.25	Personal
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Benzene		GC/FID		0.0071		3.25
Butyl acetate		GC/FID		0.10		724
Diethyl Ether		GC/FID		<0.066		310
Ethylbenzene		GC/FID		0.35		441
Propan-2-ol		GC/FID		0.095		999
Tetrachloroethylene		GC/FID		<0.013		138
Toluene		GC/FID		0.19		191
Trichloroethylene		GC/FID		<0.013		550
Xylene		GC/FID		1.1		220

OBSERVATION & RECOMMENDATIONS

All of the measured levels were found to be below the workplace exposure limits.

On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne solvents will also fluctuate. It is therefore recommended that suitable respiratory protective equipment (RPE) is made available for all staff to wear when processing waste.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
ACTIVATED CHARCOAL TUBE 226-01	25-94093-007	---	INITIAL	200	ON	OFF
			FINAL	200		
			AVERAGE	200	08.04	14.25
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
PP01	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	17-09-25
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DETAILS OF OPERATION

Personal sample undertaken on **W Hudson**. Working within the laboratory & processing waste chemicals on site

TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
23	250906/23	381	76.2	08.04	14.25	Personal
SUBSTANCE MEASURED			METHOD		RESULT 8 ^{HR} TWA	WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Benzene			GC/FID		<0.0066	3.25
Butyl acetate			GC/FID		0.031	724
Diethyl Ether			GC/FID		<0.066	310
Ethylbenzene			GC/FID		0.022	441
Propan-2-ol			GC/FID		0.13	999
Tetrachloroethylene			GC/FID		0.052	138
Toluene			GC/FID		0.026	191
Trichloroethylene			GC/FID		<0.013	550
Xylene			GC/FID		0.075	220

OBSERVATION & RECOMMENDATIONS

All of the measured levels were found to be below the workplace exposure limits.

On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne solvents will also fluctuate. It is therefore recommended that suitable respiratory protective equipment (RPE) is made available for all staff to wear when processing waste.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
ACTIVATED CHARCOAL TUBE 226-01	25-94093-008	---	INITIAL	200	ON	OFF
			FINAL	200		
			AVERAGE	200	08.04	14.25
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
PP02	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	17-09-25
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DETAILS OF OPERATION						
Personal sample undertaken on A Chafen . Working within the yard processing waste chemicals on site						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
24	250906/24	381	76.2	08.04	14.25	Personal
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Benzene		GC/FID		<0.0066		3.25
Butyl acetate		GC/FID		0.038		724
Diethyl Ether		GC/FID		<0.066		310
Ethylbenzene		GC/FID		7.3		441
Propan-2-ol		GC/FID		0.11		999
Tetrachloroethylene		GC/FID		<0.013		138
Toluene		GC/FID		0.026		191
Trichloroethylene		GC/FID		<0.013		550
Xylene		GC/FID		28		220

OBSERVATION & RECOMMENDATIONS

All of the measured levels were found to be below the workplace exposure limits.

On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne solvents will also fluctuate. It is therefore recommended that suitable respiratory protective equipment (RPE) is made available for all staff to wear when processing waste in the lab smalls building.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
ACTIVATED CHARCOAL TUBE 226-01	25-94093-009	---	INITIAL	200	08.04	14.25
			FINAL	200		
			AVERAGE	200		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
PP03	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	18-09-25
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DETAILS OF OPERATION						
Test position No.1 - Front corner of Bunker No.5 near the ash silo feed (1.5 meters high) (See diagram indicating test Positions on Page 5)						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
25	250906/25	395	790	07.50	14.25	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		7.22 mgm⁻³ 0.52 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0
OBSERVATION & RECOMMENDATIONS						
<p>During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5. A significant amount of airborne dust is present during normal waste loading & mixing operations.</p> <p>Although the measured airborne levels of Total Inhalable Dust undertaken near to the front corner of bunker No.5 were found to be below the 10mgm⁻³ limit, the measured levels should be deemed as significant due to the measured levels being above 50% of the WEL.. On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.</p> <p>It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.</p> <p>The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.</p> <p>WEATHER CONDITIONS DURING THE TEST PERIOD: Sunny & dry underfoot. Temperature : 17°C. Relative Humidity : 52% Average wind speed: 2.0 m/s South Westerly.</p>						
FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6077 RF/4139	IOM 01	INITIAL	2000	ON	OFF
			FINAL	2000	07.50	14.25
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 01	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	18-09-25
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DETAILS OF OPERATION						
Test position No.2 - Near shredding machine (1.5 meters high) (See diagram indicating test Positions on Page 5)						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
26	250906/26	395	790	07.51	14.26	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		7.15 mgm⁻³ 0.46 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0
OBSERVATION & RECOMMENDATIONS						
<p>During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5. A significant amount of airborne dust is present during normal waste loading & mixing operations.</p> <p>Although the measured airborne levels of Total Inhalable Dust undertaken near to the shredding machine were found to be below the 10mgm⁻³ limit, the measured levels should be deemed as significant due to the measured levels being above 50% of the WEL.. On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.</p> <p>It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.</p> <p>The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.</p> <p>WEATHER CONDITIONS DURING THE TEST PERIOD: Sunny & dry underfoot. Temperature : 17°C. Relative Humidity : 52% Average wind speed: 2.0 m/s South Westerly.</p>						
FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6078 RF/4140	IOM 02	INITIAL	2000	07.51	14.26
			FINAL	2000		
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 02	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	18-09-25
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DETAILS OF OPERATION

Test Position No.3 – Inside the cab of the CAT 320GC excavator. Turning waste in the bunker
(See diagram indicating test Positions on Page 5)

TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
27	250906/27	395	790	07.52	14.27	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		1.49 mgm⁻³ 0.22 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0

OBSERVATION & RECOMMENDATIONS

The measured airborne dust levels were found to be well below the workplace exposure limits. During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5.

It is recommended that all drivers keep the windows of the vehicle closed during loading/mixing operations & that the air inlet filters are changed or replaced on a regular basis during servicing in order to reduce the amount of airborne dust entering the vehicle cab.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

WEATHER CONDITIONS DURING THE TEST PERIOD:

Sunny & dry underfoot. Temperature : 17°C. Relative Humidity : 52%
Average wind speed: 2.0 m/s South Westerly.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6079 RF/4142	IOM 03	INITIAL	2000	07.52	14.27
			FINAL	2000		
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 03	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	18-09-25
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DETAILS OF OPERATION						
Personal sample undertaken on T Naylor . Carrying out normal site waste processing operations						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
28	250906/28	393	786	07.57	14.30	Personal
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		5.51 mgm⁻³ 0.42 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0
OBSERVATION & RECOMMENDATIONS						
<p>Although the measured airborne levels of Total Inhalable Dust undertaken were found to be below the 10mgm⁻³ limit, the measured levels should be deemed as significant due to the measured levels being above 50% of the WEL. On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.</p> <p>It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.</p> <p>The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.</p> <p>During the test period 20 - 25 tons of ash loaded into bunker No.5</p> <p>WEATHER CONDITIONS DURING THE TEST PERIOD: Sunny & dry underfoot. Temperature : 17°C. Relative Humidity : 52% Average wind speed: 2.0 m/s South Westerly.</p>						
FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6080 RF/4142	IOM 04	INITIAL	2000	07.57	14.30
			FINAL	2000		
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 04	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	18-09-25
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DETAILS OF OPERATION

**Test position No.1 - Front corner of Bunker No.5 near the ash silo feed (1.5 meters high)
(See diagram indicating test Positions on Page 5)**

TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
29	250906/29	395	790	07.50	14.25	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Arsenic		NIOSH 7300		<0.0001		0.1
Cadmium		NIOSH 7300		0.0002		0.025
Chromium		NIOSH 7300		<0.0006		0.5
Copper		NIOSH 7300		0.0007		1.0
Lead		NIOSH 7300		<0.0013		0.15
Nickel		NIOSH 7300		<0.0013		0.5
Tin		NIOSH 7300		<0.0004		2.0

OBSERVATION & RECOMMENDATIONS

During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5. Although a significant amount of airborne dust is present during normal waste loading & mixing operations the measured airborne levels of heavy metals were found to be below the workplace exposure limits. On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

WEATHER CONDITIONS DURING THE TEST PERIOD:

Sunny & dry underfoot. Temperature : 23°C. Relative Humidity : 58%
Average wind speed: 1.0 m/s South Westerly.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MM MCE FILTER	25-94093-020	T101	INITIAL	2000	ON	OFF
			FINAL	2000	07.50	14.25
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 05	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	18-09-25
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DETAILS OF OPERATION

Personal sample undertaken on **A Morton**. Working within the laboratory & processing waste chemicals on site

TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
30	250906/30	388	77.6	08.02	14.30	Personal
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Benzene		GC/FID		<0.0064		3.25
Butyl acetate		GC/FID		0.085		724
Diethyl Ether		GC/FID		<0.064		310
Ethylbenzene		GC/FID		0.027		441
Propan-2-ol		GC/FID		0.098		999
Tetrachloroethylene		GC/FID		<0.013		138
Toluene		GC/FID		0.10		191
Trichloroethylene		GC/FID		<0.013		550
Xylene		GC/FID		0.089		220

OBSERVATION & RECOMMENDATIONS

All of the measured levels were found to be below the workplace exposure limits.

On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne solvents will also fluctuate. It is therefore recommended that suitable respiratory protective equipment (RPE) is made available for all staff to wear when processing waste.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
ACTIVATED CHARCOAL TUBE 226-01	25-94093-010	---	INITIAL	200	08.02	ON
			FINAL	200		OFF
			AVERAGE	200		14.30
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
PP01	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	18-09-25
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DETAILS OF OPERATION

Personal sample undertaken on **L Martin**. Working within the laboratory & processing waste chemicals on site

TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
31	250906/31	388	77.6	08.02	14.30	Personal
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Benzene		GC/FID		<0.0064		3.25
Butyl acetate		GC/FID		0.041		724
Diethyl Ether		GC/FID		<0.064		310
Ethylbenzene		GC/FID		0.0068		441
Propan-2-ol		GC/FID		<0.026		999
Tetrachloroethylene		GC/FID		<0.013		138
Toluene		GC/FID		<0.0064		191
Trichloroethylene		GC/FID		<0.013		550
Xylene		GC/FID		0.026		220

OBSERVATION & RECOMMENDATIONS

All of the measured levels were found to be below the workplace exposure limits.

On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne solvents will also fluctuate. It is therefore recommended that suitable respiratory protective equipment (RPE) is made available for all staff to wear when processing waste.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
ACTIVATED CHARCOAL TUBE 226-01	25-94093-011	---	INITIAL	200	08.02	ON
			FINAL	200		OFF
			AVERAGE	200		14.30
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
PP02	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	18-09-25
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DETAILS OF OPERATION						
Personal sample undertaken on M Crowley . Working within yard processing waste chemicals on site						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
32	250906/32	386	77.2	08.04	14.30	Personal
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Benzene		GC/FID		<0.0065		3.25
Butyl acetate		GC/FID		0.20		724
Diethyl Ether		GC/FID		<0.065		310
Ethylbenzene		GC/FID		0.074		441
Propan-2-ol		GC/FID		0.053		999
Tetrachloroethylene		GC/FID		<0.013		138
Toluene		GC/FID		0.14		191
Trichloroethylene		GC/FID		<0.013		550
Xylene		GC/FID		0.26		220

OBSERVATION & RECOMMENDATIONS

All of the measured levels were found to be below the workplace exposure limits.

On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne solvents will also fluctuate. It is therefore recommended that suitable respiratory protective equipment (RPE) is made available for all staff to wear when processing waste in the lab smalls building.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of ‘normal’ exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
			INITIAL	200	ON	OFF
ACTIVATED CHARCOAL TUBE 226-01	25-94093-012	---	FINAL	200	08.04	14.30
			AVERAGE	200		
			PUMP NR.			
PP03	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	19-09-25
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DETAILS OF OPERATION						
Test position No.1 - Front corner of Bunker No.5 near the ash silo feed (1.5 meters high) (See diagram indicating test Positions on Page 5)						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
33	250906/33	404	808	07.43	14.27	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		8.77 mgm⁻³ 0.59 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0
OBSERVATION & RECOMMENDATIONS						
<p>During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5. A significant amount of airborne dust is present during normal waste loading & mixing operations.</p> <p>Although the measured airborne levels of Total Inhalable Dust undertaken near to the front corner of bunker No.5 were found to be below the 10mgm⁻³ limit, the measured levels should be deemed as significant due to the measured levels being above 50% of the WEL.. On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.</p> <p>It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.</p> <p>The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.</p> <p>WEATHER CONDITIONS DURING THE TEST PERIOD: Sunny & dry underfoot. Temperature : 20°C. Relative Humidity : 62% Average wind speed: 1.0 m/s South Westerly.</p>						
FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6081 RF/4143	IOM 01	INITIAL	2000	07.43	14.27
			FINAL	2000		
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 01	KEVIN MORRIS					

JOB REFERENCE	250906		DATE OF TEST	19-09-25
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DETAILS OF OPERATION						
Test position No.2 - Near shredding machine (1.5 meters high) (See diagram indicating test Positions on Page 5)						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
34	250906/34	401	802	07.45	14.26	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		7.45 mgm⁻³ 0.44 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0
OBSERVATION & RECOMMENDATIONS						
<p>During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5. A significant amount of airborne dust is present during normal waste loading & mixing operations.</p> <p>Although the measured airborne levels of Total Inhalable Dust undertaken near to the shredding machine were found to be below the 10mgm⁻³ limit, the measured levels should be deemed as significant due to the measured levels being above 50% of the WEL.. On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.</p> <p>It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.</p> <p>The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.</p> <p>WEATHER CONDITIONS DURING THE TEST PERIOD: Sunny & dry underfoot. Temperature : 20°C. Relative Humidity : 62% Average wind speed: 1.0 m/s South Westerly.</p>						
FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6082 RF/4144	IOM 02	INITIAL	2000	07.45	14.26
			FINAL	2000		
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 02	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	19-09-25
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DETAILS OF OPERATION

Test Position No.3 – Inside the cab of the CAT 320GC excavator. Turning waste in the bunker
(See diagram indicating test Positions on Page 5)

TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
35	250906/35	399	798	07.46	14.25	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		0.71 mgm⁻³ 0.15 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0

OBSERVATION & RECOMMENDATIONS

The measured airborne dust levels were found to be well below the workplace exposure limits. During the test period approximately 20 - 25 tons of ash was loaded into bunker No.5.

It is recommended that all drivers keep the windows of the vehicle closed during loading/mixing operations & that the air inlet filters are changed or replaced on a regular basis during servicing in order to reduce the amount of airborne dust entering the vehicle cab.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

WEATHER CONDITIONS DURING THE TEST PERIOD:

Sunny & dry underfoot. Temperature : 20°C. Relative Humidity : 62%
Average wind speed: 1.0 m/s South Westerly.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6083 RF/4145	IOM 03	INITIAL	2000	07.46	14.25
			FINAL	2000		
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 03	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	19-09-25
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DETAILS OF OPERATION						
Personal sample undertaken on T Naylor . Carrying out normal site waste processing operations						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
36	250906/36	387	774	07.55	14.22	Personal
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Total Inhalable Dust Respirable Dust		MDHS 14/4 MDHS 14/4		7.87 mgm⁻³ 0.52 mgm⁻³		WEL^{8hr} : 10 WEL^{8hr} : 4.0
OBSERVATION & RECOMMENDATIONS						
<p>Although the measured airborne levels of Total Inhalable Dust undertaken were found to be below the 10mgm⁻³ limit, the measured levels should be deemed as significant due to the measured levels being above 50% of the WEL. Although the measured airborne levels of Total Inhalable Dust undertaken on R Tripathi were found to be below the 10mgm⁻³ limit, the measured levels should be deemed as significant. On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.</p> <p>It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.</p> <p>The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.</p> <p>During the test period approximately 20 - 25 tons of ash loaded into bunker No.5</p> <p>WEATHER CONDITIONS DURING THE TEST PERIOD: Sunny & dry underfoot. Temperature : 20°C. Relative Humidity : 62% Average wind speed: 1.0 m/s South Westerly.</p>						
FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MMGF/A & RESPIRABLE SELECTING FOAM	G25/6084 RF/4146	IOM 04	INITIAL	2000	ON	OFF
			FINAL	2000	07.55	14.22
			AVERAGE	2000		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 04	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	19-09-25
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DETAILS OF OPERATION						
Test position No.1 - Front corner of Bunker No.5 near the ash silo feed (1.5 meters high) (See diagram indicating test Positions on Page 5)						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
37	250906/37	404	808	07.43	14.27	Static
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Arsenic		NIOSH 7300		<0.0001		0.1
Cadmium		NIOSH 7300		<0.0001		0.025
Chromium		NIOSH 7300		<0.0006		0.5
Copper		NIOSH 7300		<0.0006		1.0
Lead		NIOSH 7300		<0.0012		0.15
Nickel		NIOSH 7300		<0.0012		0.5
Tin		NIOSH 7300		<0.0004		2.0
OBSERVATION & RECOMMENDATIONS						
<p>During the test period 20 – 25 tons of ash was loaded into bunker No.5. Although a significant amount of airborne dust is present during normal waste loading & mixing operations the measured airborne levels of heavy metals were found to be below the workplace exposure limits. On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne dust being created will also fluctuate. It is therefore recommended that respiratory protective equipment (RPE) is made available for all staff to wear if they are required to carry out any work within close proximity of bunker No.5 during loading/mixing operations or when exceptionally dusty waste is being tipped.</p> <p>It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of ‘normal’ exposure levels.</p> <p>The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.</p> <p>WEATHER CONDITIONS DURING THE TEST PERIOD: Sunny & dry underfoot. Temperature : 20°C. Relative Humidity : 62% Average wind speed: 1.0 m/s South Westerly.</p>						
FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
25MM MCE FILTER	25-94093-021	T101	INITIAL	2000	ON	OFF
			FINAL	2000		
			AVERAGE	2000	07.43	14.27
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
AP 05	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	19-09-25
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DETAILS OF OPERATION						
Personal sample undertaken on L Martin . Working within the laboratory & processing waste chemicals on site						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
38	250906/38	390	78.0	07.52	14.22	Personal
SUBSTANCE MEASURED			METHOD		RESULT 8 ^{HR} TWA	WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Benzene			GC/FID		<0.0064	3.25
Butyl acetate			GC/FID		0.36	724
Diethyl Ether			GC/FID		<0.064	310
Ethylbenzene			GC/FID		0.034	441
Propan-2-ol			GC/FID		0.095	999
Tetrachloroethylene			GC/FID		<0.013	138
Toluene			GC/FID		0.014	191
Trichloroethylene			GC/FID		<0.013	550
Xylene			GC/FID		0.14	220

OBSERVATION & RECOMMENDATIONS

All of the measured levels were found to be below the workplace exposure limits.

On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne solvents will also fluctuate. It is therefore recommended that suitable respiratory protective equipment (RPE) is made available for all staff to wear when processing waste.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
ACTIVATED CHARCOAL TUBE 226-01	25-94093-013	---	INITIAL	200	07.52	ON
			FINAL	200		14.22
			AVERAGE	200		
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
PP01	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	19-09-25
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DETAILS OF OPERATION						
Personal sample undertaken on A Chafen . Working within the laboratory & processing waste chemicals on site						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
39	250906/39	380	76.0	08.02	14.22	Personal
SUBSTANCE MEASURED		METHOD		RESULT 8 ^{HR} TWA		WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Benzene		GC/FID		<0.0066		3.25
Butyl acetate		GC/FID		0.12		724
Diethyl Ether		GC/FID		<0.066		310
Ethylbenzene		GC/FID		0.030		441
Propan-2-ol		GC/FID		<0.026		999
Tetrachloroethylene		GC/FID		0.061		138
Toluene		GC/FID		0.033		191
Trichloroethylene		GC/FID		<0.013		550
Xylene		GC/FID		0.11		220

OBSERVATION & RECOMMENDATIONS						
All of the measured levels were found to be below the workplace exposure limits.						
On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne solvents will also fluctuate. It is therefore recommended that suitable respiratory protective equipment (RPE) is made available for all staff to wear when processing waste.						
It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.						
The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.						
FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
ACTIVATED CHARCOAL TUBE 226-01	25-94093-014	---	INITIAL	200	08.02	ON
			FINAL	200		OFF
			AVERAGE	200		14.22
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
PP02	KEVIN MORRIS					

JOB REFERENCE	250906	DATE OF TEST	19-09-25
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DETAILS OF OPERATION						
Personal sample undertaken on M Crowley . Working within yard processing waste chemicals on site						
TEST No.	SAMPLE REFERENCE	DURATION OF TEST (mins)	VOLUME OF AIR SAMPLED (litres)	TIME OF TEST		SAMPLE TYPE
				START	FINISH	
40	250906/40	380	76.0	08.02	14.22	Personal
SUBSTANCE MEASURED			METHOD		RESULT 8 ^{HR} TWA	WORKPLACE EXPOSURE LIMIT (mgm ⁻³)
Benzene			GC/FID		0.0072	3.25
Butyl acetate			GC/FID		0.50	724
Diethyl Ether			GC/FID		<0.060	310
Ethylbenzene			GC/FID		0.26	441
Propan-2-ol			GC/FID		0.10	999
Tetrachloroethylene			GC/FID		<0.013	138
Toluene			GC/FID		0.21	191
Trichloroethylene			GC/FID		<0.013	550
Xylene			GC/FID		0.95	220

OBSERVATION & RECOMMENDATIONS

All of the measured levels were found to be below the workplace exposure limits.

On a day to day basis, the type of waste being processed can vary greatly & consequently the amount of airborne solvents will also fluctuate. It is therefore recommended that suitable respiratory protective equipment (RPE) is made available for all staff to wear when processing waste in the lab smalls building.

It is also recommended that repeat monitoring is undertaken at least on an annual basis in order to acquire sufficient data to clarify the results are fully indicative of 'normal' exposure levels.

The monitoring should also be repeated at any time in the future where a change in work practices or control measures etc. may result in a change to personal exposures.

FILTER TYPE	FILTER REF.	HEAD REF.	FLOW RATE (ML/MIN)		TEST TIMES	
ACTIVATED CHARCOAL TUBE 226-01	25-94093-015	---	INITIAL	200	ON	OFF
			FINAL	200		
			AVERAGE	200	08.02	14.22
PUMP NR.	NAME OF SAMPLING TECHNICIAN					
PP03	KEVIN MORRIS					

QUALITY CONTROL FIELD BLANK SAMPLE(S)

JOB REF.	250906	DATE	15 th – 19 th September 2025
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SAMPLE REF.	SAMPLE NO.	SUBSTANCE MEASURED	METHOD	RESULT/UNITS
250906/41	G25/6085	Total Inhalable Dust	MDHS 14/4	0.00000 g
250906/42	G25/6086	Total Inhalable Dust	MDHS 14/4	0.00000 g
250906/43	G25/6087	Total Inhalable Dust	MDHS 14/4	0.00000 g
250906/44	RF/4147	Respirable Dust	MDHS 14/4	+0.00002 g
250906/45	RF/4148	Respirable Dust	MDHS 14/4	0.00000 g
250906/46	RF/4149	Respirable Dust	MDHS 14/4	-0.00002 g
250906/47	25-94093-016	Benzene	MDHS96	<0.5µg
		Butyl acetate	MDHS96	<1.0g
		Diethyl Ether	MDHS96	<5.0µg
		Ethylbenzene	MDHS96	<0.5µg
		Propan-2-ol	MDHS96	<2.0µg
		Tetrachloroethylene	MDHS96	<1.0µg
		Toluene	MDHS96	<0.5µg
		Trichloroethylene	MDHS96	<1.0µg
		Xylene	MDHS96	<1.0µg
250906/48	25-94093-022	Arsenic	NIOSH 7300	<0.1µg
		Cadmium	NIOSH 7300	<0.1µg
		Chromium	NIOSH 7300	<0.5µg
		Copper	NIOSH 7300	<0.5µg
		Lead	NIOSH 7300	<1.0µg
		Nickel	NIOSH 7300	<1.0µg
		Tin	NIOSH 7300	<0.3µg

OBSERVATIONS

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INSTRUMENT CALIBRATION CERTIFICATES

The following pages constitute copies of the certificates of calibration relating to the individual instruments used to carry out this survey.



CALIBRATION CERTIFICATE

Electronic Flow Calibrator

This certifies that the flow calibrator listed below has been tested and calibrated by SKC Ltd and is in accordance with factory specifications.

Part No. **375-00205** Serial No. **19546590** SKC Ref. **161048**

Functional Tests					
Test	Pass	Test	Pass	Test	Pass
Battery	✓	Display	✓	PC Interface	✓/A
Leak	✓	Keypad	✓		

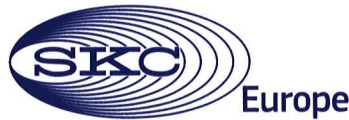
Conditions of Calibration					
Calibration Technician	Ambient Temperature (°C)	Atmospheric Pressure (mbar)	Relative Humidity (%)	Reference Instrument Used	Calibration Gas
K O'T	20.84	1013.85	59.97	OPI59B	Air

Calibration Results					
Customer Instrument Reading	Reference Instrument Reading	Reference Instrument Used	Deviation ¹	Deviation ²	Customer Unit Accuracy Specification
Qeut (ml/min)	Qref (ml/min)		(ml/min)	(% of reading)	(% of reading)
20.2	20.131	OPI75B	0.069	0.34%	2.50%
50.04	50.133	OPI75B	-0.093	-0.19%	1.00%
100.2	100.24	OPI75B	-0.04	-0.04%	1.00%
301.9	302.99	OPI75B	-1.09	-0.36%	1.00%
500.2	500.15	OPI75B	0.05	0.01%	1.00%

Reference Instrument List		
OPI59A	Vaisala PTU303 pressure, temperature, humidity meter	Calibration date 21/10/2023
OPI59B	Vaisala PTU303 pressure, temperature, humidity meter	Calibration date 13/12/2023
OPI75A	Sierra CalTrak 800 Flow Calibrator 5 – 500 ml/min	Calibration date 08/05/2024
OPI75B	Sierra CalTrak 800 Flow Calibrator 5 – 500 ml/min	Calibration date 23/01/2024
OPI76A	Sierra CalTrak 800 Flow Calibrator 50 – 5,000 ml/min	Calibration date 26/03/2024
OPI76B	Sierra CalTrak 800 Flow Calibrator 50 – 5,000 ml/min	Calibration date 08/05/2024
OPI77A	Sierra CalTrak 800 Flow Calibrator 500 – 50,000 ml/min	Calibration date 13/06/2024
OPI77B	Sierra CalTrak 800 Flow Calibrator 500 – 50,000 ml/min	Calibration date 22/01/2024

Calibration Notes	
1)	Deviation (ml/min) = Qeut – Qref
2)	Deviation (% of reading) = [(Qeut – Qref) / Qeut] x 100%.
3)	Calibration was performed under negative pressure using a high flow vacuum pump as the flow source and precision needle valves to control the flow rate.
4)	This certificate reports recorded values for the customer instrument after functional testing.
5)	The reported values are the average of 10 readings.
6)	All procedures employed and results reported are in compliance with the requirements of BS/EN/ISO/IEC 17025.
7)	The reference measurements reported in this certificate were performed using equipment with calibration by UKAS accredited calibration laboratories and traceable to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes.
8)	The uncertainty of the above measurements is ±0.95% of the flow rate (+ resolution of the instrument)]. This expanded uncertainty is standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.

Authorised Signatory	Name	Date
	J G GODFREY	29.10.2024



CALIBRATION CERTIFICATE

Electronic Flow Calibrator

This certifies that the flow calibrator listed below has been tested and calibrated by SKC Ltd and is in accordance with factory specifications.

Part No. **375-07550** Serial No. **16538455** SKC Ref. **161048**

Functional Tests					
Test	Pass	Test	Pass	Test	Pass
Battery	✓	Display	✓	PC Interface	NA
Leak	✓	Keypad	✓		

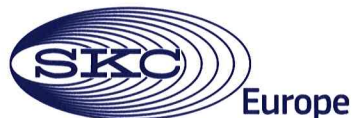
Conditions of Calibration					
Calibration Technician	Ambient Temperature (°C)	Atmospheric Pressure (mbar)	Relative Humidity (%)	Reference Instrument Used	Calibration Gas
JGG	20.79	1001.11	69.32	OPI59B	Air

Calibration Results					
Customer Instrument Reading	Reference Instrument Reading	Reference Instrument Used	Deviation ¹	Deviation ²	Customer Unit Accuracy Specification
Qeut (ml/min)	Qref (ml/min)		(ml/min)	(% of reading)	(% of reading)
749.0	746.23	OPI76A	2.77	0.37%	1.00%
999.0	995.72	OPI76A	3.28	0.33%	1.00%
2001.0	1999.5	OPI76A	1.5	0.07%	1.00%
3999.0	4012.8	OPI76A	-13.8	-0.35%	1.00%
5004.0	5014.0	OPI76A	-10	-0.20%	1.00%

Reference Instrument List		
0PI59A	Vaisala PTU303 pressure, temperature, humidity meter	Calibration date 21/10/2023
0PI59B	Vaisala PTU303 pressure, temperature, humidity meter	Calibration date 13/12/2023
0PI75A	Sierra CalTrak 800 Flow Calibrator 5 – 500 ml/min	Calibration date 08/05/2024
0PI75B	Sierra CalTrak 800 Flow Calibrator 5 – 500 ml/min	Calibration date 23/01/2024
0PI76A	Sierra CalTrak 800 Flow Calibrator 50 – 5,000 ml/min	Calibration date 26/03/2024
0PI76B	Sierra CalTrak 800 Flow Calibrator 50 – 5,000 ml/min	Calibration date 08/05/2024
0PI77A	Sierra CalTrak 800 Flow Calibrator 500 – 50,000 ml/min	Calibration date 13/06/2024
0PI77B	Sierra CalTrak 800 Flow Calibrator 500 – 50,000 ml/min	Calibration date 22/01/2024

- Calibration Notes**
- Deviation (ml/min) = Qeut – Qref
 - Deviation (% of reading) = [(Qeut – Qref) / Qeut] x 100%.
 - Calibration was performed under negative pressure using a high flow vacuum pump as the flow source and precision needle valves to control the flow rate.
 - This certificate reports recorded values for the customer instrument after functional testing.
 - The reported values are the average of 10 readings.
 - All procedures employed and results reported are in compliance with the requirements of BS/EN/ISO/IEC 17025.
 - The reference measurements reported in this certificate were performed using equipment with calibration by UKAS accredited calibration laboratories and traceable to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes.
 - The uncertainty of the above measurements is ±(0.95% of the flow rate (+ resolution of the instrument)). This expanded uncertainty is standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.

Authorised Signatory	Name	Date
	J G GODFREY	29.10.2024



CALIBRATION CERTIFICATE

Electronic Flow Calibrator

This certifies that the flow calibrator listed below has been tested and calibrated by SKC Ltd and is in accordance with factory specifications.

Part No. **717-530LA**

Serial No. **146465**

SKC Ref. **161048**

Functional Tests

Test	Pass	Test	Pass	Test	Pass
Battery	✓	Display	✓	PC Interface	✓
Leak	✓	Keypad	✓		

Conditions of Calibration

Calibration Technician	Ambient Temperature (°C)	Atmospheric Pressure (mbar)	Relative Humidity (%)	Reference Instrument Used	Calibration Gas
JGG	20.21	1000.82	69.07	OPI59B	Air

Calibration Results

Customer Instrument Reading	Reference Instrument Reading	Reference Instrument Used	Deviation ¹	Deviation ²	Customer Unit Accuracy Specification
Qeut (ml/min)	Qref (ml/min)		(ml/min)	(% of reading)	(% of reading)
31.496	31.736	OPI75A	-0.24	-0.76%	1.00%
200.76	201.13	OPI75A	-0.37	-0.18%	1.00%
300.76	300.61	OPI75A	0.15	0.05%	1.00%
398.65	399.70	OPI75A	-1.05	-0.26%	1.00%
500.88	499.19	OPI75A	1.69	0.34%	1.00%

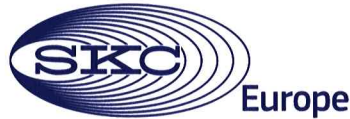
Reference Instrument List

OPI59A	Vaisala PTU303 pressure, temperature, humidity meter	Calibration date 21/10/2023
OPI59B	Vaisala PTU303 pressure, temperature, humidity meter	Calibration date 13/12/2023
OPI75A	Sierra CalTrak 800 Flow Calibrator 5 – 500 ml/min	Calibration date 08/05/2024
OPI75B	Sierra CalTrak 800 Flow Calibrator 5 – 500 ml/min	Calibration date 23/01/2024
OPI76A	Sierra CalTrak 800 Flow Calibrator 50 – 5,000 ml/min	Calibration date 26/03/2024
OPI76B	Sierra CalTrak 800 Flow Calibrator 50 – 5,000 ml/min	Calibration date 08/05/2024
OPI77A	Sierra CalTrak 800 Flow Calibrator 500 – 50,000 ml/min	Calibration date 13/06/2024
OPI77B	Sierra CalTrak 800 Flow Calibrator 500 – 50,000 ml/min	Calibration date 22/01/2024

Calibration Notes

- 1) Deviation (ml/min) = Qeut – Qref
- 2) Deviation (% of reading) = [(Qeut – Qref) / Qeut] x 100%.
- 3) Calibration was performed under negative pressure using a high flow vacuum pump as the flow source and precision needle valves to control the flow rate.
- 4) This certificate reports recorded values for the customer instrument after functional testing.
- 5) The reported values are the average of 10 readings.
- 6) All procedures employed and results reported are in compliance with the requirements of BS/EN/ISO/IEC 17025.
- 7) The reference measurements reported in this certificate were performed using equipment with calibration by UKAS accredited calibration laboratories and traceable to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes.
- 8) The uncertainty of the above measurements is $\pm[0.95\%$ of the flow rate (+ resolution of the instrument)]. This expanded uncertainty is standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.

Authorised Signatory	Name	Date
	J G GODFREY	29.10.2024



CALIBRATION CERTIFICATE

Electronic Flow Calibrator

This certifies that the flow calibrator listed below has been tested and calibrated by SKC Ltd and is in accordance with factory specifications.

Part No. **717-510MA** Serial No. **143875** SKC Ref. **161048**

Functional Tests					
Test	Pass	Test	Pass	Test	Pass
Battery	✓	Display	✓	PC Interface	✓
Leak	✓	Keypad	✓		

Conditions of Calibration					
Calibration Technician	Ambient Temperature (°C)	Atmospheric Pressure (mbar)	Relative Humidity (%)	Reference Instrument Used	Calibration Gas
JGG	20.64	1001.02	69.26	OPI59B	Air

Calibration Results					
Customer Instrument Reading	Reference Instrument Reading	Reference Instrument Used	Deviation ¹	Deviation ²	Customer Unit Accuracy Specification
Qeut (ml/min)	Qref (ml/min)		(ml/min)	(% of reading)	(% of reading)
50.14	49.992	OPI75A	0.148	0.30%	1.00%
2003.4	1999.6	OPI76A	3.8	0.19%	1.00%
3007.5	3000.1	OPI76A	7.4	0.25%	1.00%
4013.8	4000.5	OPI76A	13.3	0.33%	1.00%
5020.2	4999.3	OPI76A	20.9	0.42%	1.00%

Reference Instrument List		
OPI59A	Vaisala PTU303 pressure, temperature, humidity meter	Calibration date 21/10/2023
OPI59B	Vaisala PTU303 pressure, temperature, humidity meter	Calibration date 13/12/2023
OPI75A	Sierra CalTrak 800 Flow Calibrator 5 – 500 ml/min	Calibration date 08/05/2024
OPI75B	Sierra CalTrak 800 Flow Calibrator 5 – 500 ml/min	Calibration date 23/01/2024
OPI76A	Sierra CalTrak 800 Flow Calibrator 50 – 5,000 ml/min	Calibration date 26/03/2024
OPI76B	Sierra CalTrak 800 Flow Calibrator 50 – 5,000 ml/min	Calibration date 08/05/2024
OPI77A	Sierra CalTrak 800 Flow Calibrator 500 – 50,000 ml/min	Calibration date 13/06/2024
OPI77B	Sierra CalTrak 800 Flow Calibrator 500 – 50,000 ml/min	Calibration date 22/01/2024

Calibration Notes	
1)	Deviation (ml/min) = Qeut – Qref
2)	Deviation (% of reading) = [(Qeut – Qref) / Qeut] x 100%.
3)	Calibration was performed under negative pressure using a high flow vacuum pump as the flow source and precision needle valves to control the flow rate.
4)	This certificate reports recorded values for the customer instrument after functional testing.
5)	The reported values are the average of 10 readings.
6)	All procedures employed and results reported are in compliance with the requirements of BS/EN/ISO/IEC 17025.
7)	The reference measurements reported in this certificate were performed using equipment with calibration by UKAS accredited calibration laboratories and traceable to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes.
8)	The uncertainty of the above measurements is ±[0.95% of the flow rate (+ resolution of the instrument)]. This expanded uncertainty is standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%.

Authorised Signatory	Name	Date
	J G GODFREY	29.10.2024

APPENDIX 3

H1 assessment input data sheets (air release points and emissions inventory) and the output table (air tests)

Air release points and emissions inventory

1 of 24

1. Add release point details in the top table

User input

2. In the lower table, select release point in the 1st column and fill in substance details

Formula/calculation

Users inputs are shaded in light blue and dropdown menu in yellow.

Dropdown menu

Select a test to view

Water

View Air Tests

Environmental Assessment

Release point code	Location or grid reference	Activity/Activities	Effective height (metres)	Dispersion factor (Long term)	Dispersion factor (short term)	Dispersion factor (monthly)	Efflux velocity (m/s)	Total flow (m3/h)
EP01	WP01	Granulated Activated Carbon Scrubber	0	148	3900	529	2657	18600
EP02	WP02	Granulated activated carbon scrubber	0	148	3900	529	2657	18600
EP03	WP03	Granulated Activated Carbon Scrubber	0	148	3900	529	2657	18600
EP04	WP02	Granulated Activated Carbon Scrubber	0	148	3900	529	2657	18600
EP05	WP05	Granulated Activated Carbon Scrubber	0	148	3900	529	2657	18600
EP06	WP06	Wet scrubber	0	148	3900	529	12	100
EP07	WP07	Wet scrubber	0	148	3900	529	12	60
EP09	WP01	Granulated Activated Carbon Scrubber	0	148	3900	529	2657	18600
EP10	WP06	Granulated Activated Carbon Scrubber	0	148	3900	529	2657	18600
EP11	WP06	Granulated Activated Carbon Scrubber	0	148	3900	529	2657	18600
EP13	WP04	Granulated Activated Carbon Scrubber	0	148	3900	529	2657	18600
EP14	WP04	Wet scrubber	0	148	3900	529	12	1000

Release Point	Substance	Measurement method	Operating mode(%)	Long term conc (mg/m3)	Release rate g/s (long term)	Measurement basis (Long term)	Short term conc (mg/m3)	Release rate g/s (short term)	Measurement basis (short term)	Annual rate (t/yr)	Long term PC (ug/m3)	Short term PC (ug/m3)	Total Flow (m3/h)
EP01	Xylene, o-, m-, p- or mixed isomers	Estimated	60%	0.026	0.00		0.359	0.00		0.00	0.01	7.23	18600.00
EP02	Benzene	Estimated	60%	0.0064	0.00		0.0071	0.00		0.00	0.00	0.08	18600.00
EP02	Toluene	Estimated	60%	0.0064	0.00		0.102	0.00		0.00	0.64	2.06	18600.00
EP02	Ethylbenzene	Estimated	60%	0.0068	0.00		0.112	0.00		0.00	0.00	2.26	18600.00
EP02	Xylene, o-, m-, p- or mixed isomers	Estimated	60%	0.026	0.00		0.359	0.00		0.00	0.01	7.23	18600.00
EP02	Tetrachloroethylene	Estimated	60%	0.013	0.00		0.021	0.00		0.00	0.01	0.42	18600.00
EP02	Trichloroethylene	Estimated	60%	0.013	0.00		0.013	0.00		0.00	0.01	0.26	18600.00
EP02	Methylene chloride (dichloromethane)	Estimated	60%	0.013	0.00		0.02	0.00		0.00	0.01	0.24	18600.00
EP02	Acetone	Estimated	60%	0.006	0.00		0.1	0.00		0.00	0.00	2.02	18600.00
EP02	Methyl ethyl ketone (MEK, 2-Butanone)	Estimated	60%	0.006	0.00		0.1	0.00		0.00	0.00	2.02	18600.00
EP02	Methanol	Estimated	60%	0.01	0.00		0.1	0.00		0.00	0.01	2.02	18600.00
EP02	2-propanol	Estimated	60%	0.11	0.00		0.101	0.00		0.01	0.05	2.04	18600.00
EP03	Benzene	Estimated	100%	0.0064	0.00		0.0071	0.00		0.00	0.00	0.08	18600.00
EP03	Toluene	Estimated	100%	0.0064	0.00		0.102	0.00		0.00	0.64	2.06	18600.00
EP03	Ethylbenzene	Estimated	100%	0.0068	0.00		0.112	0.00		0.00	0.01	2.26	18600.00
EP03	Xylene, o-, m-, p- or mixed isomers	Estimated	100%	0.026	0.00		0.359	0.00		0.00	0.02	7.23	18600.00
EP03	Tetrachloroethylene	Estimated	100%	0.013	0.00		0.021	0.00		0.00	0.01	0.42	18600.00
EP03	Trichloroethylene	Estimated	100%	0.013	0.00		0.013	0.00		0.00	0.01	0.26	18600.00
EP03	Methylene chloride (dichloromethane)	Estimated	100%	0.013	0.00		0.02	0.00		0.00	0.01	0.24	18600.00
EP03	Acetone	Estimated	100%	0.006	0.00		0.1	0.00		0.00	0.00	2.02	18600.00
EP03	Methyl ethyl ketone (MEK, 2-Butanone)	Estimated	100%	0.006	0.00		0.1	0.00		0.00	0.00	2.02	18600.00
EP03	Methanol	Estimated	100%	0.01	0.00		0.1	0.00		0.00	0.01	2.02	18600.00
EP03	2-propanol	Estimated	100%	0.11	0.00		0.101	0.00		0.02	0.08	2.04	18600.00
EP03	Particulates (PM10)	Estimated	100%	0.14	0.00		0.14	0.00		0.02	0.11	1.66	18600.00
EP04	Benzene	Estimated	100%	0.0064	0.00		0.0071	0.00		0.00	0.00	0.08	18600.00
EP04	Toluene	Estimated	100%	0.0064	0.00		0.102	0.00		0.00	0.64	2.06	18600.00
EP04	Ethylbenzene	Estimated	100%	0.0068	0.00		0.112	0.00		0.00	0.01	2.26	18600.00
EP04	Xylene, o-, m-, p- or mixed isomers	Estimated	100%	0.026	0.00		0.359	0.00		0.00	0.02	7.23	18600.00
EP04	Tetrachloroethylene	Estimated	100%	0.013	0.00		0.021	0.00		0.00	0.01	0.42	18600.00
EP04	Trichloroethylene	Estimated	100%	0.013	0.00		0.013	0.00		0.00	0.01	0.26	18600.00
EP04	Methylene chloride (dichloromethane)	Estimated	100%	0.013	0.00		0.02	0.00		0.00	0.01	0.24	18600.00
EP04	Acetone	Estimated	100%	0.006	0.00		0.1	0.00		0.00	0.00	2.02	18600.00
EP04	Methyl ethyl ketone (MEK, 2-Butanone)	Estimated	100%	0.006	0.00		0.1	0.00		0.00	0.00	2.02	18600.00
EP04	Methanol	Estimated	100%	0.01	0.00		0.1	0.00		0.00	0.01	2.02	18600.00
EP04	2-propanol	Estimated	100%	0.11	0.00		0.101	0.00		0.02	0.08	2.04	18600.00
EP05	Benzene	Estimated	100%	0.0064	0.00		0.0071	0.00		0.00	0.00	0.08	18600.00
EP05	Toluene	Estimated	100%	0.0064	0.00		0.102	0.00		0.00	0.64	2.06	18600.00
EP05	Ethylbenzene	Estimated	100%	0.0068	0.00		0.112	0.00		0.00	0.01	2.26	18600.00
EP05	Xylene, o-, m-, p- or mixed isomers	Estimated	100%	0.026	0.00		0.359	0.00		0.00	0.02	7.23	18600.00
EP05	Tetrachloroethylene	Estimated	100%	0.013	0.00		0.021	0.00		0.00	0.01	0.42	18600.00
EP05	Trichloroethylene	Estimated	100%	0.013	0.00		0.013	0.00		0.00	0.01	0.26	18600.00
EP05	Methylene chloride (dichloromethane)	Estimated	100%	0.013	0.00		0.02	0.00		0.00	0.01	0.24	18600.00
EP05	Acetone	Estimated	100%	0.006	0.00		0.1	0.00		0.00	0.00	2.02	18600.00
EP05	Methyl ethyl ketone (MEK, 2-Butanone)	Estimated	100%	0.006	0.00		0.1	0.00		0.00	0.00	2.02	18600.00
EP05	Methanol	Estimated	100%	0.01	0.00		0.1	0.00		0.00	0.01	2.02	18600.00
EP05	2-propanol	Estimated	100%	0.11	0.00		0.101	0.00		0.02	0.08	2.04	18600.00
EP06	Hydrogen chloride	Estimated	100%	0.015	0.00		0.15	0.00		0.00	0.00	0.02	100.00
EP06	Sulphur dioxide (24 hr mean)	Estimated	100%	0.13	0.00		1.1	0.00		0.00	0.00	0.07	100.00
EP06	Particulates (PM10)	Estimated	100%	0.14	0.00		0.14	0.00		0.00	0.00	0.01	100.00
EP07	Ammonia	Estimated	100%	65	0.00		135	0.00		0.03	0.16	8.78	60.00
EP09	Xylene, o-, m-, p- or mixed isomers	Estimated	60%	0.26	0.00		0.359	0.00		0.03	0.12	7.23	18600.00
EP10	Benzene	Estimated	100%	0.0064	0.00		0.0071	0.00		0.00	0.00	0.08	18600.00
EP10	Toluene	Estimated	100%	0.0064	0.00		0.102	0.00		0.00	0.64	2.06	18600.00
EP10	Ethylbenzene	Estimated	100%	0.0068	0.00		0.112	0.00		0.00	0.01	2.26	18600.00
EP10	Xylene, o-, m-, p- or mixed isomers	Estimated	100%	0.026	0.00		0.359	0.00		0.00	0.02	7.23	18600.00
EP10	Tetrachloroethylene	Estimated	100%	0.013	0.00		0.021	0.00		0.00	0.01	0.42	18600.00
EP10	Trichloroethylene	Estimated	100%	0.013	0.00		0.013	0.00		0.00	0.01	0.26	18600.00
EP10	Methylene chloride (dichloromethane)	Estimated	100%	0.013	0.00		0.02	0.00		0.00	0.01	0.24	18600.00
EP10	Acetone	Estimated	100%	0.006	0.00		0.1	0.00		0.00	0.00	2.02	18600.00
EP10	Methyl ethyl ketone (MEK, 2-Butanone)	Estimated	100%	0.006	0.00		0.1	0.00		0.00	0.00	2.02	18600.00
EP10	Methanol	Estimated	100%	0.01	0.00		0.1	0.00		0.00	0.01	2.02	18600.00
EP10	2-propanol	Estimated	100%	0.11	0.00		0.101	0.00		0.02	0.08	2.04	18600.00
EP11	Benzene	Estimated	100%	0.0064	0.00		0.0071	0.00		0.00	0.00	0.08	18600.00
EP11	Toluene	Estimated	100%	0.0064	0.00		0.102	0.00		0.00	0.64	2.06	18600.00
EP11	Ethylbenzene	Estimated	100%	0.0068	0.00		0.112	0.00		0.00	0.01	2.26	18600.00
EP11	Xylene, o-, m-, p- or mixed isomers	Estimated	100%	0.026	0.00		0.359	0.00		0.00	0.02	7.23	18600.00
EP11	Tetrachloroethylene	Estimated	100%	0.013	0.00		0.021	0.00		0.00	0.01	0.42	18600.00
EP11	Trichloroethylene	Estimated	100%	0.013	0.00		0.013	0.00		0.00	0.01	0.26	18600.00
EP11	Methylene chloride (dichloromethane)	Estimated	100%	0.013	0.00		0.02	0.00		0.00	0.01	0.24	18600.00
EP11	Acetone	Estimated	100%	0.006	0.00		0.1	0.00		0.00	0.00	2.02	18600.00
EP11	Methyl ethyl ketone (MEK, 2-Butanone)	Estimated	100%	0.006	0.00		0.1	0.00		0.00	0.00	2.02	18600.00
EP11	Methanol	Estimated	100%	0.01	0.00		0.1	0.00		0.00	0.01	2.02	18600.00
EP11	2-propanol	Estimated	100%	0.11	0.00		0.101	0.00		0.02	0.08	2.04	18600.00
EP13	Hydrogen chloride	Estimated	100%	0.015	0.00		0.15	0.00		0.00	0.01	3.02	18600.00
EP13	Sulphur dioxide (24 hr mean)	Estimated	100%	0.13	0.00		1.3	0.01		0.02	0.10	15.46	18600.00
EP14	Ammonia	Estimated	100%	65	0.02		130	0.04		0.57	2.67	140.83	1000.00

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