**Annual performance report for:** APHA, Weybridge Incineration Plant

**Permit Number: EPR/AP3039SD**

**Year: 2022**

This report is required under the Industrial Emissions Directive’s Article 55(2) requirements on reporting and public information on waste incineration plants and co-incineration plants, which require the operator to produce an annual report on the functioning and monitoring of the plant and make it available to the public.

**1. Introduction**

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| Name and address of plant | Animal Plant Health Agency (APHA)  Incineration Facility,  Woodham Lane,  New Haw,  Addlestone,  Surrey  KT15 3NB |
| Description of waste input | Hazardous clinical, Domestic/commercial & animal waste. |
| Operator contact details if members of the public have any questions | [andy.scorer@defra.gov.uk](mailto:andy.scorer@defra.gov.uk)  DEFRA Estates; APHA Addlestone, KT15 3NB |

**2. Plant description**

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| The main purpose of the Facility is to incinerate hazardous and clinical waste generated on the Weybridge site and associated Regional Laboratories including animal carcasses.  Waste Reception & Storage  Waste is collected at the facilities referred to above in bins. These are transported to the Weybridge incinerator and placed in the storage area until selected by an Operator for processing. A bin lift loads the waste into the incinerator by rotating the bins 180 degrees, this ensures all the contents fall out of the bin into the waste feed hopper. The waste is injected into the furnace by a ram. Once inside the combustion chamber, rams move the waste through the grate at approximately 900oC thus promoting continuous mixing of the waste with the combustion air introduced from beneath the grate into the heart of the fire. In the secondary chamber the gas temperature is maintained above 850°C for 2 seconds. Ash from the grate is discharged into a bespoke skip and is tested as per Permit requirements prior to disposal.  Energy Recovery  Hot gases from the combustion of waste pass through a waste heat steam boiler. The temperature of the gases are reduced from over 850oC to around 160oC. The gases heat up the water in the boiler and produce steam at 4.5barG. This steam is fed to the site Energy Centre which distributes thermal energy around the site for use in autoclaves, effluent treatment and space heating.  Gas Cleaning  Downstream of the boiler bicarbonate soda is injected to neutralise acid gases. Activated carbon is injected to adsorb any remaining dioxins, furans and heavy metals. Prior to release into the atmosphere the gases pass through a fabric filter where the air pollution control (APC) residues are removed from the gas stream; these are disposed of at a hazardous waste treatment facility. Once the gases have been cleaned, they are discharged into the atmosphere via a stack. |

**3. Summary of Plant Operation**

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| Hazardous clinical waste received | 670 Tonnes |
| Animal Waste | 287 Tonnes |
| Total waste received | 957 Tonnes |
| Total plant operational hours | 2074 CWI + 1242 Crem = 3316 hours |
| Total hours of “abnormal operation” (see permit for definition) | 1 hour |
| Total quantity of incinerator bottom ash + cremator ash (IBA) produced | 97 Tonnes |
| Disposal or recovery route for IBA | Landfill |
| Did any batches of IBA test as hazardous? If yes, state quantity | Yes 14640 kg |
| Total quantity of air pollution control (APC) residues produced | 76 Tonnes |
| Total quantity of air pollution control (APC) sodium bicarbonate reagent used | 67 Tonnes |
| Total quantity of air pollution control (APC) carbon reagent used | 7.760 Tonnes |
| Electricity Usage (Both machines) | 23,711 KWh |
| Gas Usage (Both machines) | 14,355 MWh |
| Water | None. Dry process. |
| Disposal or recovery route for APC residues | Recovery at Castle Environmental |

**4. Summary of Plant Emissions**

**4.1 Summary of continuous emissions monitoring results for emissions to air**

The following charts show the performance of the plant against its emission limit values (ELVs) for substances that are continuously monitored. Please note: as the plant only operates for 12 hours per day, the daily limits are not valid and thus do not apply.

 

**4.2 Summary of periodic monitoring results for emissions to air**

The table below shows the results of periodically monitored substances.

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| **Substance** | **Emission limit value** | **Results** | |
| **Mar 2022** | **October 2022** |
| Mercury and its compounds | 0.05 mg/m3 | 0.002 mg/m3 | 0.00083 mg/m3 |
| Cadmium & thallium and their compounds (total) | 0.05 mg/m3 | 0.003 mg/m3 | 0.0024 mg/m3 |
| Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total) | 0.5 mg/m3 | 0.039 mg/m3 | 0.053 mg/m3 |
| Dioxins and furans (I-TEQ) | 0.1 ng/m3 | 0.009 ng/m3 | 0.011 ng/m3 |
| Hydrogen Fluoride | 2 mg/m3 | 0.19 mg/m3 | <0.12 mg/m3 |

**4.3 Summary of monitoring results for emissions to water**

There are no emissions to water from the process.

**5. Summary of Permit Compliance**

**5.1 Summary of any notifications or non-compliances under the permit**

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| **Date** | **Summary of notification or non-compliance** | **Reason** | **Measures taken to prevent reoccurrence** |
| 10.01.2022 | Part A report due to exceedance of hydrogen chloride emission over two consecutive 30 minute periods. | No evidence of abatement plant failure or CEMS problems, possibly a container of chlorinated disinfectant beyond its expiry date charged to bin. | Issue communicated to Safety representatives for communication to colleagues. |
| 24.02.2022 | Part A report due to exceedance of hydrogen chloride emission over two consecutive 30 minute periods. | No evidence of abatement plant failure or CEMS problems, possibly a container of chlorinated disinfectant beyond its expiry date charged to bin. | Safety Alert issued and communicated to site colleagues.  Management Board brief to ensure top level support for waste management training module completion by all site colleagues. |
| 01.04.2022 | Part A report due to exceedance of hydrogen chloride emission over a 30 minute period. | Sodium bicarbonate observed to be bridging over hopper outlet interfering with continuous flow. | Bi Carbonate grade is to be changed and increased monitoring has been introduced, additional training is also to be given to both Incinerator Supervisor and operators. |
| 03.05.2022 | Part A report due to exceedance of hydrogen chloride emission over a 30 minute period. | Sodium bicarbonate observed to be also bridging over small hopper outlet interfering with continuous flow. New grade of sodium bicarbonate ordered but not yet on-line. | Additional vibrator applied to small hopper. It has been recognised that both Carbon Dosing and Bi-Carbonate equipment are in need of replacement. The process of procurement to commence. |
| 13.09.2022 | Part A report due to exceedance of hydrogen chloride emission over a 30 minute period. | The data acquired at the CEMS is an anomaly with high emissions existing long after all waste was burnt out and plant off-line. | Important background information involves the work being performed on the continuous emissions monitoring system (CEMS) of the incineration facility by A1-CBISS that day, the CEMS service provider. The supplier was on site calibrating the machines and performing testing including bottled gas injection throughout the day. A1-CBSS, when challenged, claim the hydrogen chloride responses were not a result of their works although they were open regarding actively working on the unit all day.  The bin charged at 16:30 was 179kg animal bedding contaminated with FAM30 disinfectant, no further waste was charged due to the hydrogen chloride emission spike. Fam30 is not a chlorinated disinfectant and the waste was burnt out within a half hour, the emissions continued for a further hour, this is of course inconceivable and unfortunately has occurred previously during these maintenance and calibration visits. Care has been taken to manage the wastes appropriately since a non-compliance event arose earlier in the year with communication, on-line training and tool box talks. The abatement equipment has been carefully managed as it is known to require replacement which we are working toward. On the balance of probabilities it would seem that we have had instrument interference during the CEMS works. |
| 10.10.2022 | Part A report due to exceedance of hydrogen chloride emission over a 30 minute period. | Discarded chlorinated wastes is the likely reason for this breach. | Loading of waste was immediately stopped, the sodium bicarbonate dosing system was checked and found to be delivering as usual.  The oxygen level was very high at the CEMS @16.5% exaggerating the CEMS data which is corrected to 11%. Despite the data exaggeration the second half hour listed above would still have exceeded 60mg/Nm3 although much closer to the limit as demonstrated on the attached data sheet.  Waste inputs is something we are working hard on across the site with new training packages and updated procedures.  The inability of the current sodium bicarbonate unit to respond to the increase in hydrogen chloride gas detected at the stack is an issue that we are remediating with the installation of a new dosing unit during our next shut-down. This is designed to respond to the acid gas profile at the continuous emissions monitoring system. |
| 20.12.2022 | Part C report due to exceedance of hydrogen chloride emission over a 30 minute period. | Interruption of plant processes resulting from plant trip on pressure regulation safety checks. | Ensure waste is completely burnt out before performing safety checks. The waste had been used to generate sufficient energy to produce enough steam to lift the safety relief valves and minimising the gas input. A temporary shutdown of burners and abatement plant was enough to affect abatement performance. |

**5.2 Summary of any complaints received and actions to taken to resolve them.**

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| **Date of complaint** | **Summary of complaint** | **Reason for complaint including whether substantiated by the operator or the EA** | **If substantiated, measures to prevent reoccurrence** |
|  | NONE |  |  |

**6. Summary of plant improvements**

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| **Summary of any permit improvement conditions that have been completed within the year and the resulting environmental benefits.** |
| None |
| **Summary of any changes to the plant or operating techniques which required a variation to the permit and a summary of the resulting environmental impact.** |
| A new incinerator Permit has been issued to APHA, Weybridge by the Environment Agency. This accommodates a switch from the current 1996 built units which are end of life to two modern, more fuel efficient units with functionality meeting the requirements of new emission limit thresholds e.g. reduced oxides of nitrogen to air capability. The project to build the units has unfortunately been significantly delayed due to design changes of both new building and the incineration plant. The first new plant was due to take up duty by 2022 but is now known that it will be several years before a new plant is completed. To ensure continuous service to the government science programmes we will need to continue running the current clinical waste incinerator for several years. To comply with the new BREF, additional SNCR abatement techniques have been trialled on the current unit and proven to be successful meeting the anticipated new limit. New continuous emissions monitoring equipment is also being purchased, to be installed first quarter 2023, which will have the functionality to monitor ammonia for slip detection when engaging the new urea reagent based system. |
| **Summary of any other improvements made to the plant or planned to be made and a summary of the resulting environmental benefits.** |
| The planned maintenance intervals for both the clinical waste incinerator and the animal cremator have been increased due to the age of the equipment to ensure continuous compliant service. The #1 clinical waste incinerator unit is to be refurbished to support the site from a resilience perspective whilst the #2 unit is to have air pollution control reagent dosing systems replaced during the first half of 2023. |