HUNTSMAN CORPORATION (UK) LTD

Llanelli Plant, Bynea, Llanelli, SA14 9TE.

Environmental Permitting Regulations
Permit Number BV4223IE_v006

Annual Performance Report for 2023

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Introduction

Huntsman Corporation UK Limited operates a specialist organic chemical production plant with a capacity of approximately 37,000 tonnes per annum on the site of the former Bynea Colliery and Bynea Steel Works. On the eastern and north-eastern boundaries of the site is the River Loughor which lies within the Burry Inlet. The river estuary and Burry inlet have been designated a Site of Special Scientific Interest as well as being part of the Carmarthen Bay and Estuaries Special Area of Conservation. The Burry inlet has been designated a Special Protected Area and a Wetland of International Importance (RAMSAR site).

The principal manufacturing operations involve reaction of basic glycols with ammonia in the presence of a nickel catalyst in the Continuous Production Unit. This plant can manufacture morpholine and co-products or polyetheramines. The required products are then separated and purified by distillation. Additionally, an oxidised derivative of N-methyl morpholine is produced in the dedicated NMMO plant referred to as the Batch Production Unit. Products from both plants are sold either in bulk or are packed on site into various sized drums or Intermediate Bulk Containers.

Point source releases to air are primarily emissions from combustion processes in a boiler used to raise steam to provide process heat and in a thermal oxidiser to incinerate the non-halogenated strong effluent process waste. Natural gas is used as the main fuel for the boiler with gas oil as standby. The thermal oxidiser is regulated a hazardous waste incinerator under the Waste Incineration (England and Wales) Regulations 2002 implementing the European Waste Incineration Directive (2000/76/EC). It is fuelled by natural gas and a morpholine process by-product, Amine C8, which can be used as an alternative to natural gas or as a supplement. Heat from the oxidiser is used to raise steam for the installation relieving the load on the site boiler.

Releases to controlled waters consist of weaker process effluents from plant clean downs, vent scrubber draining and surface water run-off from production areas. The effluent is treated in a reed bed before final discharge to the River Loughor.

Thermal Oxidiser Operation

Llanelli Plant operates a single small thermal oxidizer which burns the site strong effluent, typically 5-10% amine residues from the manufacturing process. Please find below quantities of effluent incinerated in 2023 per month.

H3 Performance 2023		
Month	Effluent - Tonnes Incinerated	Days Operating
Jan	650.2	15
Feb	857.8	18
Mar	547.9	21
Apr	1,094.2	30
May	460.1	12
Jun	686.3	18
Jul	1,129.7	31
Aug	827.3	21
Sep	704.8	25
Oct	78.7	0
Nov	934.2	29
Dec	947.2	31
TOTAL	**8,918.3**	**251**

Much of the effluent is generated from ‘water of reaction’ produced in the manufacture of amines. Strong tank washings generated when switching tank duty or preparing equipment for maintenance also generates strong effluent. The waste is non halogenated and burning it cannot produce dioxins.

Residues

There are no releases to controlled waters from the thermal oxidiser and no residues result from its operation.

Energy Recovery

No electricity is generated from the thermal oxidiser. High pressure 450lbs steam is recovered from a waste heat boiler and is used for plant heating. Additionally, incoming water is heated through an economizer.

Abnormal Operation

In 2023 there were no periods of abnormal operation of the continuous emissions monitors.

Plant Monitoring

The New Thermal Oxidiser (H3) is monitored by an Op-sys light frequency FTIR system and a Flame Ionization Detector (FID) and a PCME electrostatic dust monitor.

The parameters continuously monitored are:

Nitrous Oxides (NOx)
Carbon Monoxide (CO)
Volatile Organic Compounds (VOC)
Dust
Oxygen
Moisture
Pressure
Temperature

The limits on pollutant parameters (ELVs) are listed in the site permit BV4223IE v_005.

Monthly emissions graphs are submitted to the Environment Agency every six months. These are available on the Public Register.

Periodic monitoring is undertaken every six months by an independent Natural Resources Wales approved contractor. These are reported on form Air 1 which is available on the Public Register.

In 2023 two rounds of monitoring was undertaken.

Incinerator Compliance

There were no exceedences of Emission Limit Values for in 2023. Typically, the thermal oxidizer operates well within the ELVs.

Compliance with oxygen and temperature requirements is by way of process interlocks which automatically shutdown the plant if the combustion chamber falls below 850^{o}C and 6% Oxygen or if ELVs are exceeded.

Amine Plant Releases to Water

Note this is for emissions not technically connected to the operation of the incineration plant.

Releases to River Loughor are described on forms W1 submitted to NRW quarterly.

Graph of Reed Bed Performance for emissions to the river Loughor is shown below.