



Warwick Chemicals
Mostyn Manufacturing Site
Mostyn
Holywell
Flintshire
CH8 9HE

Report for Natural Resources Wales - review of fugitive emissions for 2022

INTRODUCTION

This report has been drafted in order to comply with clause 4.1.4 of the company's EP permit, number BU 2357 (as varied):

4.1.4

The Operator shall review fugitive emissions, having regard to the application of Best Available Techniques, on an annual basis, or such other period as shall be agreed in writing by the Agency, and a summary report on this review shall be sent to the Agency detailing such releases and the measures taken to reduce them within 3 months of the end of such period.

BACKGROUND

The issue of fugitive emissions is high on the list of company concerns as failure to address these early enough can result in a greater loss of containment, potential environmental problems, neighbourhood complaints and the associated financial and reputational implications with all of these issues.

Historically there had been a number of complaints from the local inhabitants about particular smells that had been attributed to accidental releases (fugitive emissions) from the site. Considerable work has been put into rectifying these problems with the result that there has been a significant reduction in the number of complaints over the past seventeen years.

There have been no external complaints regarding smells reported to Warwick Chemicals in 2022.

The company's primary concern is with VOC's as this potentially represents a greater impact on the environment as well as health and safety, although there are several other areas where fugitive emissions can occur (cooling tower discharge and particulates from all the boiler stacks). It is felt that the particulate release from the primary steam raising boiler stacks is minimal as the primary fuel, gas, is very clean, diesel fuel has not been used for the last ten years. The incinerator stack is monitored as required by the site's Environmental Permit; particulate emission is not an issue. The boilers are on a regular maintenance regime to ensure that they operate as efficiently as possible.

The operating cooling towers are cleaned/disinfected at least once a year, are equipped with continual dosing systems with the system being tested every two weeks. This maintenance regime is suitable for keeping any emissions to a minimum.

REVIEW

There had been a couple of occasions this year when the manufacturing plants had been off-line for a period of time, and then the site ceased production in October.

The operation of the incinerator has been more efficient but is dependent on-site operation to generate fuel to burn. We are still able to store the residue material on site and feed it back into the incinerator rather than send it off-site for disposal, and this option is now common practice if the incinerator has to shut down. This is more energy efficient from a transport fuel, waste recovery and steam generation point of view.

Six main areas were reviewed, and considerations made for each area:

1. Acetic Acid & Acetic Anhydride
2. Ethylene diamine
3. Diesel
4. VOC's from gas combustion or incineration of residues
5. VOC's from paints or solvents
6. Thermal transfer fluid
7. Loss of containment incidents

1 ACETIC ACID & ACETIC ANHYDRIDE

In the production plant and tank farm areas fugitive emissions of acetic acid/acetic anhydride generally come from leaking pipe work, pump seals/glands, and any spillage incident. There is the potential for emissions from scrubber systems that have not been able to effectively cope with the quantity of acid gas passing through the system.

The push to get more reporting from the manufacturing staff has resulted in an increase in the number of reported leaks. It has been identified that this early identification and reporting has been beneficial in reduction of more serious problems.

There have been no emission breaches from any of the plant scrubber emission release points in 2022.

2 ETHYLENE DIAMINE

There has been no change to the EDA offloading/circulation system. Any emissions from the offloading procedure are still passed through the water counter-current scrubber system. The only destination for EDA was the DAED production plant, the pipework to all other plants has now been removed.

The use of the second tank for EDA storage has occurred to capture the benefit from a significant reduction in the purchase price. Operational procedures have been put in place to manage this tank operation. The scrubbing system is operational for both storage tanks.

Calculation of the annual emissions based on raw material offloading frequency for this year has reduced due to the closure of the site, approximately 28 kilos.

3 DIESEL

The use of diesel on site is still an ongoing concern to the company as any release of this material into the river will have a significant environmental impact. The instruction that any contractor has to use the diesel from the site store has led to a minimisation of transient storage tanks, minimising the risk. The management of the diesel used by contracting companies has stepped up and they are monitored when using generators or welding sets to ensure that there are drip trays under their equipment. This instruction is reinforced during the monthly contractor's safety meetings. A number of 'oil scavenging pigs' have been lowered into the central collection chamber to remove any oil that has become entrained in the water from the production areas. These are changed on a regular basis and, so far, there appears to be a slight reduction in the

quantity of oil detected in the water. The change in April to the use of white diesel had no effect on the usage quantities.

The scheduled activities, involving diesel, are still carried out:

- running the stand-by hydraulic pump for the waste water treatment plant. This is still used when the central collection chamber is cleaned out (every eight to ten weeks) and is part of a maintenance activity. The test running of the pump is on a maintenance schedule to ensure correct operation in the event of a site power failure.
- test running the diesel pumps for the deluge delivery system for the DAED/AED Plant once a week. This has to be carried out for 30 minutes to allow the diesel engines to reach their designed operating temperature.

Due to the site closure, there has been reduced use of diesel for generators and fork lift trucks.

4 VOC'S FROM GAS COMBUSTION

The primary use of gas on this site is for combustion for steam generation. The main steam boilers are maintained and monitored/checked every two weeks to ensure that they are running at peak efficiency.

The other gas usage is on the incinerator unit where it is used to heat up the unit to operating temperature before the residue fuel is ignited. The operating regime of the incinerator has changed slightly to optimise operations. The unit is now run at a slightly lower throughput with the effect that the continual run times are longer, and the overall down time is less. This has the effect of reducing the quantity of gas used as there are fewer start-ups. It has also meant that the operation has been more stable with a slight reduction in overall emission levels.

Calculations for the amount of VOC's produced from gas combustion in the boilers and incinerator are based on spot monitoring carried out by Element. Some assumptions have been made with the calculations, but the final figure is 3kg. This is a significant decrease on previous figures.

5 VOC'S FROM PAINTS & SOLVENTS

The quantity of painting carried out in 2022 has been less than last year with a reduced amount of emissions, calculated to be around 80kgs

The quantity of solvents used on site by the Engineering Department, R & D Department and Analytical Department is relatively small and work has been done to look for suitable alternatives. The solvents currently used will be the ones most suitable for that particular duty and until an alternative is available the situation will remain the same.

Any steelwork, where possible, for new projects is being specified as galvanised. This will reduce the need for painting.

The procedures for the use of and disposal/recycling of solvents are reviewed and audited with any suggested improvements being implemented as soon as possible.

6 THERMAL TRANSFER FLUID

Although the total volume of thermal transfer fluid in the system has increased (now includes the AED Plant equipment) the operation of the system is still the same. Calculations for the amount of VOC's produced by the operation of the hot oil system has reduced due to the site shutdown and because the thermal oil was replaced in 2020 which has a higher flash point. The calculation amounts to between 5kg – 7kg.

CONCLUSION

There were a number of projects that have been carried out (some still to be completed) that will reduce the possibility of fugitive emissions. However, the site closure has overtaken these projects and the possibility of any future fugitive emissions from the manufacture of TAED has been significantly reduced.

Mr P. J. Bryant
HSE Manager
30th January 2023