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Subject: Solutia UK Ltd, Newport Chemical Complex – EPR Permit Number: BR9715IB
Permit Condition 4.1.4 – Annual Review of Fugitive Emissions

Introduction

This document is an annual submission to update on Permit condition 4.1.4 which relates to fugitive emissions from the site. Included in the following sections are fugitive emissions to both air & water, as well as findings of a monitoring exercise for fugitive benzene along the benzene transfer line(s) & associated equipment – this being carried out for the first time on the TH3 plant following more recent commissioning activity

[1] Air Fugitive Emissions

In the 2016 calendar year, there were a few Notifiable events which relate to air emissions from non-point source locations. These comprised:

- 04/01/2016 - Rupture of a bursting disk (over pressure protection) on the D2010 process whilst processing a non-standard batch. Approximately 10kg released to atmosphere, which also resulted in x2 off-site complaints
- 10/01/2016 - A failed pipework section due to under lagging corrosion on the D2010 process, resulting in a leak of approximately 2000kg of glacial acetic acid. This was directed to the effluent system, and the fume was largely abated by the use of water sprays
- 23/02/2016 - Failure of a 'bellows' unit on the D2010 process. This was a 5.1 failure notification rather than any kind of substantial release; however, some fume was evident locally
- 12/08/2016 – Whilst commissioning the TH3 process, and introducing chemicals for the first time, a heat damaged gasket failed, and approximately 12kg of liquid benzene was released to ground. This was largely captured by a separator unit, but some would inevitably have been released in the vapour phase

In each instance a Part A Notification was submitted, and followed-up by a Part B, detailing findings of the respective investigations. Where applicable also, the quantities released have been incorporated into the annual emissions reports

[2] Water Fugitive Emissions

All of the site process waters, and surface waters are collected, and treated via a common system, meaning that it is not possible to differentiate between normal process effluent and fugitive discharges. There was x1 Permit Notification in 2016, as described below:

- 26/01/2016 – An electrical supply failure to a pump unit during heavy rain necessitated the pumping of effluent during the defined 'cease discharge' period (to accommodate tidal effects in the estuary) in order to prevent flooding. Effluent remained within specification for the duration

[3] Benzene Monitoring (TH3)

Therminol products are produced from Benzene using a mixture of continuous and batch processes. Progressing through the process cycle, higher boiling materials are produced that have very low vapour pressures. Annual surveys are conducted to give confidence that control measures such as: double mechanical seals, gasketing, maintenance etc. are working effectively as intended, and also highlight if any areas which exhibit elevated levels that might require attention

Monitoring Approach

Due to the TH3 plant being new, the survey conducted during the 2016 period included the entire length of the new benzene transfer system (where accessible), which included: feed & return pump shaft seals, compressor shaft seals, control valves seals & flanges, pre-heater 'End Caps', flowmeter flanges

Method

The monitoring involved use of an 'BM GasAlertMicro 5' portable Photo Ionisation Detector (PID) calibrated directly for Benzene. The instrument can measure down to 0.1 ppm, and was employed using the following method:

- Pumps / Compressors Must be running
 2cm away from rotating seal, or as near as possible to guard
- Control Valves 2cm away from seal on top of valve packing
- Pre-heaters Average of 4 points off each side, with end caps de-lagged beforehand

All monitoring was carried out by Eastman site staff, and the results are detailed below:

Results

No benzene was detected at any location on the new benzene transfer line or equipment aside from the End Cap special flanges on the Pre-Heaters. Results below:

East Furnace Preheater (E)	Special Flange	5.5
East Furnace Preheater (W)	Special Flange	7.2
West Furnace Preheater (E)	Special Flange	6.8
West Furnace Preheater (W)	Special Flange	7.0

Discussion

The results of the monitoring indicate that the various components on the new system are installed & operating as intended. As per past measurement exercises, there was benzene detected in the immediate proximity to the large end-cap flanges on the pre-heater units, this being comparable to previous (i.e. <10ppm), and as such seemingly a function of; operating at high temperatures, and design

As with the TH2 process, the TH3 plant has a comprehensive inspection programme. The results of checks are recorded in SAP, the fugitive report being separately maintained

Signed:



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