EASTMAN

Solutia UK Ltd
(a subsidiary of Eastman Chemical Company)
Corporation Road
Newport
South Wales
NP19 4XF

L. Parr
PPC Assistant
Natural Resources Wales
Plas yr Afon
St.Mellons Business Park
CARDIFF
CF3 0EY

16th April 2015

Dear Mrs. Parr,

PERMIT BR9715IB: CONDITION 4.1.4

In response to Condition 4.1.4 of this permit.

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.

AIR

1. Background

Therminols are produced from Benzene. The process is a mixture of continuous and batch. Progressing through the process cycle higher boiling materials are produced that have very low vapour pressures.

The Therminol 2 process was previously regulated under IPC Authorisation AW6570 issued in 1996 and annual fugitive monitoring has been done since then.

Previous annual studies have shown the plant to be well maintained. Typical improvements already made as a result of these studies include replacing pumps in Benzene duty with double mechanical seals instead of single and improved gasketing, tightening procedures on the Preheaters and maintenance to the relieving manway.

2. Approach

Table 2.1 : Equipment Included In Monitoring

Equipment Type	Area Monitored	Number Monitored
Pumps	Shaft Seals	11
Compressor	Shaft Seals	2
Relieving Man-ways	Lip Seal	1
Control Valves / Valves	Stem Seal	13
Pre-heater End Caps	Flange Seal	4

2.1 Screening Method

The screening method used a portable Photo ionisation detector (PID) and logger which had been calibrated directly for Benzene. This method can measure down to 0.1 ppm.

The following procedures were used to screen the different types of sample point:

Pumps / Compressors
- Must be running.
- 2 cm away from rotating seal or as near as possible to guard.

Control Valves
- 2 cm away from seal on top of gland packing.

Relieving Man-ways
- Average of 4 points directly around seal 2 cm away, when tank is not filling and is at a level considered to be typical.

Pre-heaters
- Average of 4 points one off each side with the end caps de-lagged beforehand.

All fugitive monitoring was carried out by Eastman site staff. The results of the monitoring for the individual items of equipment are shown at the end of this report.

3. Discussion

Inspection programme

The Therminol 2 plant at Newport has a comprehensive inspection programme. The results of checks are recorded in SAP, the fugitive report being separately maintained.

Pump Monitoring

The results of the monitoring of pumps show that the measured fugitive emission concentrations were all below 10ppm of benzene.

Relieving Manway Monitoring

The results of the monitoring of the relieving manway show that the measured fugitive screening concentrations were typical for this type of unit.

Control Valve Monitoring

The results of the monitoring of control valves show that the measured fugitive emission concentrations were all below 5ppm of benzene which is very good.

Hydrogen Compressor

The results of the monitoring of the hydrogen compressor show that the measured fugitive emission concentrations were all below 10ppm of benzene.

Preheater End Caps

Following the previous campaigns of fugitive monitoring it has been shown that evaluating and adopting a new gasket material and using a better tightening procedure we can avoid fugitive emissions which previously were of concern. With historical emissions in the thousands of ppm the highest this time was 24ppm.

Item Number	Description	Category	Concentration (ppm)
08PU0302	Benzene return pump	Pump	0.8
08PU0203	Benzene column reboiler pump	Pump	0.4
08PU0204	Benzene column reboiler pump	Pump	0.6
08PU0207	Benzene feed pump	Pump	1.6
08PU0208	Benzene reflux pump	Pump	1.8
08PU0210	Benzene feed / reflux pump	Pump	2.4
08PU0104	Benzene transfer pump	Pump	1
08PU0105	Benzene transfer pump	Pump	2.2
08PU0209	Benzene column boot drain pump	Pump	0.8
08PU0013	Benzene transfer pump (South Tank Farm)	Pump	0
08PU0011	Benzene offloading pump (South Tank Farm)	Pump	0.2
08TA0001	Benzene bulk storage tank top manway (South Tank Farm)	Rel.Manway	8
08B0308PV1	Hydrogen compressor	ControlValve	0.2
08B0308PV2	Hydrogen compressor	ControlValve	0.2
08B0308PV30	Hydrogen compressor	ControlValve	0.2
08C0202PV10	Benzene stripping column back pressure	ControlValve	1.2
08C0202LV10	Benzene stripping column level controller	ControlValve	1.4
08C0202FT10	Benzene stripping column flow controller	ControlValve	0.8
08TA0101LV10	Benzene day tank	ControlValve	1
08TA0206LC10	Reflux drum level controller	ControlValve	0.2
08TA0206FT10	Reflux drum	ControlValve	0.2
08TA0306LV10	Benzene / hydrogen 1st stage receiver	ControlValve	0.2
08TA0307LV10	Benzene / hydrogen 2nd stage receiver	ControlValve	0.4
08ZZ0111FV30	Pyrolysis furnace (On blast wall - south)	ControlValve	2
08ZZ0111PV10	Hydrogen vent actuated block valve	Valve	0
8HE0115	Preheater 1 end cap (east)	SpecialFlange	3
8HE0115	Preheater 2 end cap	SpecialFlange	5
8HE0115	Preheater 3 end cap	SpecialFlange	6
8HE0115	Preheater 4 end cap (west)	SpecialFlange	5
08B0308	Hydrogen compressor (North side)	Compressor	1
	Hydrogen compressor (South side)	Compressor	1.6

Furnace pre-heater end caps			ppm
		Top	12
		Bottom	0
		East	0
		West	0
8HE0115	Preheater 1 end cap (east)	Average	3
		Top	20
		Bottom	0
		East	0
		West	0
8HE0115	Preheater 2 end cap	Average	5
		Top	24
		Bottom	0
		East	0
		West	0
8HE0115	Preheater 3 end cap	Average	6
		Top	20
		Bottom	0
		East	0
8HE0115	Preheater 4 end cap (west)	West	0
			5

WATER

We take a composite sample of effluent every week that is analysed for 18 substances plus pH and C.O.D. These determinands include many that are not subjected to a Permit limit but monitoring them does give an indication of total losses. These are: HCHO, S2075, 2-ethylhexanol, 2-ethylhexanoic acid, diphenyl ether, iso-decanol, phenols, Santicizer®, triphenyl phosphate, and triphenyls. We have data on the quantities of these discharged for several years, however because the masses measured are totals we can not distinguish between normal process discharges and fugitive ones.

This letter can go into the public register. Please contact me if you have any queries, 01633 754549.

Yours sincerely

Nicola Newton
HSE Manager

cc K. Agnew