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Date: 20th February 2020

Subject: Solutia UK Ltd, Newport Chemical Complex – EPR Permit Number: BR9715IB
Permit Condition 4.2.2 – Annual Activity Performance Review

4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to NRW by 31st January (or other date agreed in writing by NRW) each year. The report(s) shall include as a minimum:

- (a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;*
- (b) the annual production / treatment data set out in schedule 4 table S4.2;*
- (c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule*

As such the following should serve as interpretive commentary on the annual Permit forms submitted for the preceding years performance

Table S4.1 - Reporting of Monitoring Data

Emissions to Air

As per previous year, Boiler 16 continued to operate in CHP configuration in conjunction with the Gas Turbine unit which was re-started in 2018. The unit operated without significant outage for the year, and also benefitted from operation of a Condensing Economizer (heat recovery) unit which reduces the overall amount of fuel required to generate steam by pre-heating the boiler feed-water with waste heat. The statutory emissions tests were all within the NO_x and CO emissions limits. Boiler 14 (the back-up unit) did not operate for more than 14 days, and so was not required to be monitored

Chloromethane emissions from the Dequest operation was comparable to previous years, with the spot samples continuing to be somewhat variable due to the range of grades being manufactured. HCl emission were also typically low consistent with previous years

Benzene is released from the Benzene storages via conservation vents. As vapour return is utilized when filling, the main cause of releases to atmosphere are breathing losses i.e. when the temperature fluctuates (day & night) a quantity of benzene vapour is released. Emissions are comparable with previous

Emissions from the Therminol Pyrolysis Furnaces are subject to a Permit Improvement Item for NO_x, due to elevated emissions having been observed. This continued to be the case throughout 2019, and also

includes the TH2 furnace which returned to operation after the fitment of a new coil. An improvement plan has been submitted, related to commencement of (low NOx) upgrades to these units - the first stage of which will be the TH2 furnace in Q2/2020. The benzene emissions from these Pyrolysis furnaces were found to be typically low, and the smaller Biphenyl & Santowax furnaces on TH3 were similarly compliant with the NOx limits for the year

Emissions to Water

Emissions to water are reported on a quarterly basis for the listed parameters. For 2019 there were x4 Notifications for PCP to effluent. As per a Permit Improvement item, a Reed Beds Treatment System was installed & commissioned for the purpose of progressively treating groundwater contaminated with PCP. It is expected that this unit will be more effective in 2020 as the units become more established and capable of higher treatment potential

COD discharges remained comparable with previous year, within limit(s) but higher than historically due to the bio-treatment plant being mothballed in 2017 alongside the cessation of the Santicizer process. Other parameters remained within specification with no appreciable change in trends noted

Greater Crested Newts

GCN's (Greater Crested Newts) reporting was done in 2018, and survey reporting is on a 5year cycle. As such, there is nothing additional to report presently

Table S4.2 – Annual Production / Treatment

Production of Chemicals

Production tonnage was reported in the annual Permit Returns, and for 2019 amounted to 102680 tonnes which represented a 3.4% increase over the previous year. Production tonnage is used in a range of metrics to help better evaluate ongoing environmental performance

Table S4.3 – Performance Parameters

Effluent COD

The P1 Returns form shows ongoing COD emissions expressed as kg/t. This is broadly comparable to recent years (albeit a slight increase), and there is an observable step-change increase in 2017 corresponding to the mothballing of the Bio-Treatment Plant that year

Effluent Toxicity

Effluent Toxicity (NOEC) has not been monitored or reported since 2015 following the end of an agreed toxicity monitoring campaign in 2014. This showed that with both; the Formose Plant, and the Bio-Treatment plant operating (treating formaldehyde & phenol respectively), the toxicity level was deemed insignificant

VOC

As per the other metrics, VOC kg/t is similarly tracked over time, and the results are comparable over the measurement period. An additional decimal place has been quoted since 2015, which gives a number for comparison rather than a <0.1 kg/t stated previously

PCOP

PCOP (Photochemical Ozone Creation Potential) shows a general longer term declining trend, but with relatively consistent values in recent years

Table S4.4 – Reporting Forms

Air

Refer to 'Table S4.1 – Reporting of Monitoring Data' 'Emissions to Air' section(s) above

Air (Annual Releases)

Oxides of Nitrogen are quoted using the established methodology and is within the 20000 kg annual emission limit. Refer also to the 'Emissions to Air' section above which outlines the issues relating to NO_x - As reported previously, some NO_x emissions issues have been resolved in recent years (i.e. CHP and smaller Therminol furnaces), and the (currently non-compliant) Therminol Pyrolysis furnaces are scheduled to undergo upgrades, as per the respective Permit Improvement Condition

Oxides of Sulphur are not reported, but justification is given on the A2 report form i.e. 'Effectively zero since final burning of HFO in 2012'. Sulphur content of kerosene back-up fuel was previously tested to confirm it was below the 0.1% allowable threshold

Chloromethane is well within the annual limit and utilizes a rolling average of monitored concentrations. This approach is being applied to help accommodate the historical over-reporting prior to more recent MCertified methods being employed by external monitoring contractor, and also the wide variability in the spot test results

The Benzene figure quoted comprises emissions from the bulk storages and also x2 Notifiable releases which occurred during the year. The total was within the 800kg annual limit

Water (Combined W1 + W2)

Refer to 'Table S4.1 – Reporting of Monitoring Data' 'Emissions to Water' section(s) above

Waste Return

The main waste arising from the site is Santotar, which is utilised as Cemfuel®. There was more waste reported than the previous year, however the waste t/t metric was comparable

Water Usage

All water to site is via a single metered supply. When looked at as a m³/t, there is a clear long term trend in water efficiency in line with the water reduction efforts that have been made throughout the period

Energy

The main site boiler continued to operate in Combined Heat & Power configuration throughout the year. As such all of the (Eastman) net electricity requirements were met via a combination of the; Gas Turbine & Wind Turbines. There was comparable energy efficiency performance to previous year(s), however an improvement will be realized going forward due to commissioning of a waste heat recovery unit in Q4/2019. The full impact of this energy efficiency project should become more evident in the forthcoming year(s). In addition ISO50001 certification was also gained during 2019, supported by: an employee energy engagement initiative, and an energy efficiency awareness programme

Performance Indicators

All of the metrics listed on P1 have been detailed in the preceding sections, the exception being CHP thermal efficiency. This is 68.5% as stated on the CHP QA Certificate. Performance against this metric is still being developed

Signed:



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