Industry & Waste Regulation Team
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Date: 22nd February 2019

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

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Table S4.1 - Reporting of Monitoring Data

Emissions to Air

The CHP unit recommenced operation in the early part of 2018. This had the effect of meeting the 75 mg/Nm3 NOx emission limit for such a unit - thereby regaining emissions compliance. That said, an extended outage at the end of the year resulted in a Notification as the NOx reverted to elevated levels for a short period, as captured in the monitoring results near years end. It is perhaps worth noting also that the Gas Turbine will not be operated in by-pass mode, with the exhaust always being discharged via the main boiler. Boiler 14 (the back-up unit) did not operate for more than 14 days, and so was not required to be monitored

Chloromethane from the Dequest operation is somewhat lower than historically. A step change was noted the previous year following a change from in-house method to externally MCerts accredited test-house. HCl from the process was 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 3 Pyrolysis Furnaces are subject to a Permit Improvement Item for NOx, as the emission were found to be higher than expected upon start-up of the plant. This is reflected in the results observed during the emissions tests. The second of the two tests in the year yielded some odd results, and these are being questioned with the monitoring company as they do not appear to align with standard operating conditions at the time of the monitoring

The smaller Biphenyl and Santowax furnaces were compliant with the NOx limits for the year, some adjustments having been done the previous year to optimize the units after commissioning

The planned Condensing Economiser is still in project phase, and as such could not be monitored & reported. Upon operation, the exhaust will be identical in composition to Boiler 16 (being a split stream), but with the heat recovered for use in boiler pre-heat

Emissions to Water

Emissions to water are reported on a quarterly basis for the listed parameters. In 2018 there were two non-compliances reported for PCP – the cause of this being: preparatory groundworks for a PCP reduction project, in conjunction with rainfall events. Otherwise the other parameters were within their respective limits. Trends are reviewed on a regular basis, and it can be seen that since the Bio-Treatment plant was mothballed in early 2017 (in conjunction with cessation of the Santicizer process), the COD increased somewhat (as expected), but still comfortably within the emission limit

Greater Crested Newts

Reporting for GCN's (Greater Crested Newts) is a new Permit requirement, and so the most recent survey (conducted in 2017) will accompany this response. These surveys are provisionally intended to take place bi-annually i.e. more frequent than the 5 years specified

Table S4.2 – Annual Production / Treatment

Production of Chemicals

Production tonnage was reported in the annual Permit Returns, and for 2018 amounted to 99304 tonnes. This is incorporated into a variety of metrics, and so is an important parameter in this regard. This production tonnage was a 17.1 % increase Vs the previous year, and was across all plants as a result of a strong order book

Table S4.3 – Performance Parameters

Effluent COD

As mentioned in 'emissions to water' above, COD levels have increased in conjunction with mothballing of the Bio Treatment plant – which can be seen in the reported COD kg/t metric(s). The P1 form shows the historical kg/t, and whilst these are broadly comparable, there is an observable increase since 2017. There is limited data in this process configuration, and so little can be interpreted from the available results

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 NOx - some of which have been resolved (i.e. CHP and smaller Therminol furnaces), and also the Therminol Pyrolysis furnaces which are subject to a Permit Improvement Condition

Oxides of Sulpher are not reported, but justification is given on the A2 report form i.e. 'Effectively zero since final burning of HFO in 2012'. Should kerosene be used as a back-up fuel, then there could be a small emission of SO2, but this would be relatively small. Sulphur content of the kerosene inventory was 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

Phenol is no longer monitored or reported, as it is no longer features on site following cessation of Santicizer operations

The Benzene figure quoted comprises emissions from the bulk storages. Spillages have not been included in this value. If it is assumed that spillages go to atmosphere, then this would increase the value from 516 kg to 578 kg. The Permit Return form can be amended & resubmitted if required

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. In 2018 also, there were

no significant arisings of waste from non-production projects, which might otherwise skew the waste metric

Water Usage

All water to site is via a single metered supply. There is a longer-term trend of reduced water usage due to a range of water reduction projects in recent years (as described in the 4 yearly water & waste efficiency submission). The usage metric for 2018 is the best performance to date, despite the occurrence of a water-main failure during the year

Energy

2018 saw the re-start of the site Gas Turbine unit allowing for Combined Heat & Power operation. As such all of the (Eastman) electricity requirements are now being met via a combination of the; Gas Turbine & Wind Turbines. There was in fact a net export of electricity (and associated CO_2 emissions), however this export was not incorporated into the energy metric(s) as the CO_2 was still produced on site. Whilst the overall energy used in 2018 was up compared to previous years, the associated CO_2 per tonne of product was lower. This is considered to be both as a result of; high annual production, in conjunction with CHP operation

Performance Indicators

All of the metrics listed on P1 have been detailed in the preceding sections, the exception being CHP thermal efficiency. This is 63.3% as stated on the CHP QA Certificate, however there is no previous data with which to compare

Signed:



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