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Solutia UK Ltd

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Mr I Oakes
Technical Specialist (PPC / RSR)
Natural Resources Wales
Chester Road
Buckley
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CH7 3AJ

17th October 2014

Dear Ian,

ENVIRONMENTAL PERMIT NP3335GR

Thank you for your quick email response today.

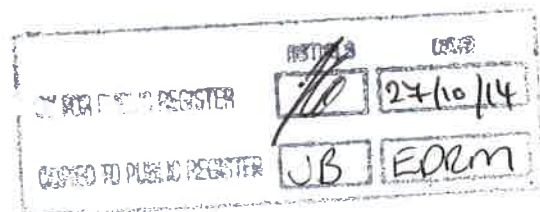
Please see attached requests to cease monitoring of the output from the carbon filters, and to cease environmental monitoring. These requests are consistent with our previous discussion and so I hope you can consider them. If you have questions or require further information please tell me: 01633 754367, fax 754291, email rechan@eastman.com

Yours sincerely

Rich Chandler.

R. E. Chandler
Environment and Land Manager

cc P. S. Armitage
M. Mackay



Responsible Care



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FM 01970



**REQUEST TO TERMINATE WEEKLY SAMPLING & ANALYSES OF THE ACTIVATED CARBON FILTER
OUTLETS DETAILED IN PERMIT EPR/NP3335GR**

1.0 INTRODUCTION

Solutia UK Ltd submitted a Pre-Surrender Permit document for the above permit to NRW on the 26th September 2014. As stated under "Potential Issues", item 6 of the document, there is the intent to request NRW to remove the requirement for weekly sampling and analysis of the three activated carbon filter outlets. The filters are used for removing residual organic chemicals from groundwater prior to discharge through the site's Effluent Treatment Plant (ETP). This document is to formally request NRW to agree to these changes. Agreement by exchange of letters is requested to allow analysis to cease in November 2014.

Sample analysis is completed in-house. These laboratory facilities are scheduled to close at the end of this year as part of full site closure. Closing of the laboratory facilities prompts the need to review whether a regulated requirement for weekly sampling and analysis is still warranted.

Groundwater from the site is collected from two dewatering borehole pumps (South and Mid boreholes) and two collection sumps (Brook Culvert and Road Culvert sumps). The two dewatering boreholes are located at the south end of the site. They were installed to lower groundwater levels in order to maintain slope stability of the bank at the site boundary adjoining Queen Street. The Brook Culvert sump collects groundwater primarily from a French drain running along the up-gradient side of the Tref-y-Nant Brook culvert. The Road Sump primarily collects rain water from a pipe tunnel under Queen Street which contains the effluent transfer lines as they pass from the main site to the ETP. Both sumps are also connected to another French drain which runs along the inside of the perimeter fence on Queen Street. This drain provides secondary containment in the event of groundwater levels rising due to any malfunction of the dewatering equipment.

In the past this groundwater was discharged to the site's ETP for biological treatment prior to discharge to the River Dee. In January 2009 organic chemical manufacture at the site ended and biological treatment at the ETP was subsequently de-commissioned. Three activated carbon filter units were installed to allow residual organic chemicals to be removed from the collected groundwater (individual units for each of the dewatering pumps and a combined unit for the two culvert sumps), as authorised by EPR Permit EPR/NP3335GR. The treated groundwater from these units discharge to the site's ETP where they combine with inorganic effluent streams and storm water.

At the time of permit issue the use of these activated carbon units to 'polish' groundwater was based on a limited trial operation of a few months. The permit therefore included for weekly

operational sampling and analysis of the outlets of the carbon filters to ensure they achieved the desired removal of organics from the groundwater to allow discharge to the ETP.

The following provides additional information to determine the need for continued regulated weekly sampling and analysis of the carbon filter outlets:

2.0 REVIEW OF SAMPLING/ANALYSIS REQUIREMENTS

2.1 GCMS Organic Analysis Requirements

The treated outlet from each individual carbon filter is analysed by GCMS for micro-pollutants with limits set for Hydroxy-Benzo-Thiazole @ 20 ppb, Flectol A @ 2 ppb and others @ 2 ppb. These operational limits were set based on measured inlet concentrations at the time of commissioning to be able to determine >10% breakthrough of organics. The limits were assessed as being acceptable for discharge to the River Dee when taking into account the low flow rates (2l/s) which would receive additional mixing with other effluent and storm water streams prior to being discharged to the River Dee. In five years of operating these filters no organics have been detected by GCMS analysis, except for one instance during the early weeks of commissioning.

The five years of weekly data, with effectively no detections, has demonstrated the ability of these carbon filters to remove all organic constituents for the operating life of the carbon unit, typically six to 12 months. Experience has shown that the units need to be replaced because of carbon blinding causing pressure drop issues and not because of reduced ability to remove organic constituents.

On the basis of this data we consider the requirement for ongoing weekly analysis by GCMS is no longer needed.

2.2 Monohydric Phenol Analysis Requirements

The outlet stream from each of the individual carbon filters is analysed for monohydric phenol. The limit is set at 0.2 mg/l. This limit was set the same as the consent discharge limit from the site's ETP. In five years of operating these filters all phenol results have been below the limit of detection (0.01 mg/l).

On the basis of this data the need for ongoing weekly phenol analysis is no longer considered required.

2.3 Iron Analysis Requirements

The treated outlet from each individual carbon filter is analysed for iron. Iron has an objective level of 25 mg/l. The permit states that the objective level has been set to monitor the effectiveness of the carbon filters and detect Fe breakthrough from the outlet of the filters. Operating experience has shown that the carbon filters are ineffective in removing

dissolved iron from the groundwater. Outlet concentrations are wholly dependent on seasonal variation of incoming groundwater concentrations. Five years of data has now been collected to show the range of iron concentrations. Collection of further data is considered to bring no additional value.

On the basis of this data and the fact measured iron concentrations are independent of the performance of the carbon filters we consider the requirement for ongoing weekly iron analysis is no longer needed.

Solutia UK Ltd
17th October 2014



ENVIRONMENTAL MONITORING PROGRAMME AS DETAILED IN PERMIT EPR/NP3335GR

1.0 INTRODUCTION.

Solutia UK Ltd issued a Pre-Surrender Permit document to NRW on the 26th September 2014. As stated under "Potential Issues", item 7 of the document, there is the intent to request NRW to remove the requirement for continued Environmental Monitoring. This document is the formal request to NRW for this change. Agreement by exchange of letters is requested to allow monitoring to cease in November 2014.

Sample analysis is completed in-house. These laboratory facilities are scheduled to close at the end of this year as part of full site closure. This closure and the intended surrender of the EPR permit (which includes the monitoring programme), prompts the need to review whether a regulated monitoring programme is still warranted.

The monitoring programme was established in the 1980s by site management to assess potential impact of operations/ground conditions (Manufacturing Site, Rhosymedre Quarry and Effluent Treatment Plant). This programme pre-dates Integrated Pollution Control (IPC). Recently it has been incorporated within regulatory permits to recognise the work already undertaken.

The following provides additional information to determine whether the need for a regulated monitoring programme still exists.

2.0 REVIEW OF MONITORING PROGRAMME.

2.1 River Dee Monitoring

The programme includes for monthly sampling of the River Dee Upstream and Downstream of the outfall from the sites' Effluent Treatment Plant (ETP) and the analysis of micro-pollutants by GCMS (see Appendix 1). The range of constituents relate to the past organic manufacturing activities on the site together with compounds formed during biological treatment of those effluents streams. Organic chemical manufacture at the site stopped in January 2009 and the requirement for biological treatment ended in April of the same year. Since then, only inorganic chemical manufacture by DA Nano Materials Ltd. and more

recently Air Products has remained on site, with discharge through the ETP, but without the need for biological treatment.

More than twenty years of analytical data has been collected which shows very infrequent detection of organic constituents. For the last five years, since organic chemical manufacturing operations stopped, there has been no detection of constituents in either the upstream or downstream river monitoring.

On this basis coupled with the full closure of site manufacturing operations in November, the need for ongoing monthly monitoring, by Solutia UK Ltd., is no longer considered required. It is also recognised that NRW already monitor the River Dee at Newbridge, on a more frequent basis than that currently carried out by Solutia.

2.2 Pontcysyllte Adit and Tref-y-Nant Brook Monitoring

The programme includes for monthly sampling of the adit which runs under the site and the brook which runs in a culvert section under / adjacent to the site. Analysis is for TOC, phenol and micro-pollutants by GCMS (Appendix 1).

Monitoring has been completed to assess the potential impact to the adit and brook from groundwater under-flowing both active site operations and historical ground conditions.

More than twenty years of analytical data have been collected. The data shows a downward trend of constituents in early years, shows limited detection of constituents in later years and no detection of constituents in the past five years.

On the basis of this data , the stopping of all active site operations in November and no foreseen reason why historical ground conditions should adversely change, the need for ongoing monthly monitoring is no longer considered required.

In addition to the monthly sampling of the adit and brook as required under the permit, Solutia for the past 15 years has separately conducted quarterly monitoring through use of third party Environmental Consultants and Laboratory. In making the decision to stop onsite monthly analysis, it is recognised that this sampling at a reduced (annual) frequency will be continued.

2.3 Site Groundwater Monitoring.

The programme includes for monthly sampling of site groundwater from two dewatering borehole pumps (South and Mid boreholes) and two groundwater collection sumps (Brook Culvert and Road Culvert sumps). Analysis is for TOC, phenols and micro-pollutants by GCMS (Appendix 1).

The two de-watering boreholes are located at the south end of the site. They were installed to lower groundwater levels to ensure slope stability of the bank at the site boundary adjoining Queen Street. The Brook Culvert Sump collects groundwater primarily from a French drain running along the up-gradient side of the Tref-y-Nant Brook culvert. The Road Culvert Sump primarily collects rain water from a pipe tunnel where transfer lines from the main site to the ETP pass beneath Queen Street. Both sumps are also connected to a further French drain running along the site fence line at Queen Street road level which provides secondary containment in the event of groundwater levels increasing due to pump de-watering problems.

Monitoring was introduced in the 1980s to investigate groundwater conditions in order to develop the Conceptual Site Model (CSM) for the site. Further investigation work was completed by URS in 2010/2011 which included drilling additional boreholes, soil and groundwater sampling to allow finalising of the CSM.

More than thirty years of analytical data have been collected. The data show a downward trend for all constituents, stable levels at or near zero for many and defines peak limits for those most impacted by rainfall events.

On the basis of the amount of data collected, trends shown and the fact the CSM is now finalised, the need for continued ongoing monthly monitoring is considered to have no additional value. Any marginal changes are considered to have no significant impact on the current treatment of the groundwater by activated carbon or the proposed treatment through the local sewage works under a Trade Effluent agreement.

In making this decision, annual sampling of the both dewatering boreholes and the two sumps, by a third party laboratory, separate from any permit requirement, will be introduced as a precautionary measure to allow confirmation conditions remain stable.

2.4 Rhosymedre Quarry Leachate and Groundwater from Borehole B3.

The programme includes for sampling of collected leachate which is discharged to the local sewage works under a Trade Effluent agreement. The programme also includes groundwater monitoring at borehole B3 near to the bottom exit of the quarry. This borehole is situated up-gradient of the final leachate collection trench. Analysis is for TOC, phenol and micro-pollutants by GCMS (Appendix 1).

Monitoring was introduced in the 1980s to investigate changing leachate conditions within the quarry fill and the potential off-site impact. An Environmental Risk Assessment completed in 2000, concluded it highly unlikely that detectable concentrations of site contaminants could occur in groundwater which could end up in the River Dee. Further investigation by URS in 2013 resulted in the drilling of additional boreholes in the quarry fill,

deep groundwater and both shallow/deep groundwater exiting the outlet from the quarry (Boreholes 115A&B). Boreholes 115A&B are located down gradient of the final leachate collection trench. URS Phase II Environmental Site Assessment report, using both Borehole B3 historical data and new data from Boreholes 115A&B concludes, there are likely to be insignificant risks to the River Dee and its local tributaries from groundwater migrating off-site, from the Quarry.

More than twenty years of analytical data for leachate and groundwater (from B3) have been collected. The data shows a downward trend in early years, with results now being stable at or near zero, with the exception of few defined peaks during extreme rainfall events.

On the basis of this data coupled with the conclusions drawn from the independent assessment reports, on-going monthly monitoring as a permit condition is no longer considered necessary.

In making this decision, the need for an extension to the 2013 URS investigation work is, however, recognised. Following a recent review of the data with NRW, Eastman has agreed to undertake further sampling of Boreholes B3, 115A&B and leachate discharge to sewer on three further monthly occasions this year and two seasonal occasions in future years. This is completely separate from any permit condition.

Solutia UK Ltd

17th October 2014

APPENDIX 1

MONITORING PROGRAMME SAMPLE ANALYSIS					
COMPOUND	BROOK & ROAD CULVERTS	R. DEE UPSTREAM & DOWN STREAM	TREFYNANT BROOK & PONTCYSYLLE ADIT	RHOSYMEDRE QUARRY GROUNDWATER & LEACHATE	DE-WATERING BOREHOLES
Aniline	x	x	x	x	x
Benzothiazole	x	x	x		
Hydroxybenzothiazole	x		x	x	x
2,4 Dichloroaniline	x		x	x	x
2,4 Dichlorophenol	x	x	x	x	x
2,4 Di-Methylphenol	x		x	x	x
2,6 Di-Methylphenol	x		x		
Ethylmorpholine	x	x	x	x	x
Flectol A (TMQ)	x	x	x	x	x
Methyl BTH	x		x	x	
o-Cresol	x	x	x		
o-Phenetidine	x		x	x	x
p-Cresol	x	x	x		
Phenols GCMS	x	x	x		
Monohydric Phenol	x		x	x	x
p- Phenetidine	x		x	x	x
Sulphur mol.	x		x	x	
Tetra Chloroethylene	x			x	x
2,4,6 Trichlorophenol	x	x	x	x	x
Toluene	x	x	x	x	x
Xylene	x	x	x	x	x
Ethoxybenzene		x		x	x
Tri Chloroethylene		x	x		
Phenylisothiocyanate		x	x		
Phthalimide		x		x	x
MMCD		x			
DMK		x		x	
Methyl sulphonyl BTH		x			
Methyl BTH sulphone		x			
Acetylmorpholine				x	x
Total Organic Carbon	x		x	x	x

