Natural Resources Wales permitting decisions

Whole Surrender of a Bespoke Permit

We have decided to accept the surrender of the permit for Ruabon Chemical Works operated by Air Products Electronics Advanced Materials Europe Limited.

The permit number is EPR/BV2689IE.

We are satisfied that the necessary measures have been taken to avoid any pollution risk and to return the site to a satisfactory state.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements.

Purpose of this document

This decision document:

- explains how the operator's application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account

Structure of this document

- Key issues
- Annex 1 the decision checklist

Key issues of the decision

The permit held by Air Products Electronics Advanced Materials Europe Limited (Air Products) allowed the production of silica and associated storage of raw materials used in that process. The products manufactured were either sodium or potassium stabilised silica slurries. The principal raw materials used in the manufacture of these slurries included:

- Sodium or potassium silicate solutions;
- Concentrated sulphuric acid;
- Sodium or potassium hydroxide; and
- Formulation additives (principally tetramethylammonium hydroxide (TMAH) and diethylene triamine pentaacetic acid (DTPA)).

Production at the site ceased in November 2014 and the silica manufacturing plant and associated transfer lines were decommissioned shortly thereafter.

The land on which the installation is located forms part of the larger Ruabon Works site, which is owned by Solutia UK Limited (Solutia), a subsidiary of Eastman Chemical Company. Solutia lease this part of the main site to Air Products. Solutia occupies a separate part of the site and holds a separate permit (ref. EPR/NP3335GR) for the carbon filter treatment of abstracted groundwater. When originally granted in 2004, this permit also allowed the manufacture of several organic compounds, which was carried out across the larger site, under permit reference number EPR/BQ4173IK; these activities and land on which they were carried out have since been surrendered from this permit.

Prior to the closure of the silica manufacturing plant, effluent from the process was transferred via pipeline to a Waste Water Treatment Plant (WWTP) for neutralisation and removal of solids before discharge to the River Dee. In addition to the silica effluent, the WWTP also received treated groundwater from Solutia's carbon filters and surface water drained from the Solutia part of the site. Following the closure of the silica plant there was no longer a need for Air Products to operate the WWTP, as the source of the silica effluent has been removed. However there remained a requirement for Solutia to continue to use the WWTP in order for them to be able to discharge the treated groundwater and site surface water to the Dee; operation and control of the WWTP (renamed as the Ground and Stormwater Storage Facility) and associated transfer line was therefore transferred to Solutia in April 2015.

The original baseline ground conditions for the entire site were measured in 2003 as part of the applications for the larger Solutia permit (ref. BQ4173IK) and the Air Products permit. As part of this investigation, two boreholes were opened within the installation area for the purposes of determining ground conditions and retrieving soil samples for analysis. Groundwater conditions were also measured in 2003 via eight boreholes (seven located on-site and one up hydraulic gradient).

Pollution Risk and Pollution Incidents

Key potentially polluting activities associated with the activity have been identified as:

- Release of raw materials to ground from storage vessels;
- Manufacture of base products;
- Receipt of raw materials and filling of storage vessels; and
- Transfer of raw materials, process liquors and effluents in transfer lines.

Section 2 of the application report 'Ruabon Installation, Site Condition Report for Surrender' describes the measures taken during the life of the permit to control these pollution risks. These control measures included a comprehensive inspection and preventative maintenance programmes which were implemented through a series of policy statements and work instructions.

During the life of the permit three pollution incidents occurred where materials reached the ground (i.e. releases were not captured by drains, and did not occur within buildings or on areas of hardstanding). These incidents occurred in 2003, 2007 and 2011.

The 2003 incident resulted in a release of process liquor into the Tref-y-Nant Brook, which is a tributary of the River Dee. We consider that this would not have had an impact on the ground at the installation, and would have been significantly diluted in the Brook and in the River Dee. The 2007 incident involved the failure of a drain which allowed effluent containing sulphuric acid, caustic soda and silica to leak into the ground over an unknown period of time. When the leak was discovered the faulty section of pipework was repaired. The 2011 incident involved failure of one of the joints on the sodium silicate line, which occurred when the pipeline froze during extreme weather conditions. This resulted in the loss of one tonne of sodium silicate solution to unmade ground.

Decommissioning and Removal of Pollution Risk

Following the closure of the silica manufacturing plant in November 2014, all waste materials were removed from the installation for disposal by a specialist waste contractor, and all machinery and pipework was disconnected and cleaned out. All production and storage area buildings have been demolished. A full description of the measures taken by the applicant to decommission the site and remove pollution risk is given in Section 4 of the application report 'Ruabon Installation, Site Condition Report for Surrender'.

On 23rd April 2015 the Area Compliance Officer visited the site and confirmed that the materials which could present a pollution risk have been removed and all chemical production and storage buildings have been demolished. The only remaining structures on the site – namely the main site offices and security / reception building – are due to be demolished in August 2015.

We have reviewed the decommissioning activities and consider that Air Products has demonstrated that all pollution risks associated with the surrender area have been removed and that decommissioning activities are unlikely to have caused pollution. The Area Compliance Officer has confirmed that decommissioning activities in the surrender area have been completed satisfactorily.

Review of Surrender Monitoring Data

In January 2015 the applicant carried out ground investigation to determine current ground conditions and soil contaminant concentration that could be compared with the baseline data gathered in 2003. This involved opening two exploratory boreholes for the purpose of retrieving soil samples for analysis. These boreholes were located approximately 1m from the site of the boreholes opened in 2003 as part of the baseline investigation.

Groundwater samples were also retrieved from the seven boreholes that were put in place on the site as part of the site groundwater monitoring programme, and one that is located up hydraulic gradient from the site. Groundwater sampling rounds have been undertaken periodically at the installation and in order to provide representative baseline data, the applicant used the first data available for each borehole to form part of the baseline data set for the installation to which the 2015 data was compared.

Analysis of the soil samples retrieved from the two boreholes indicated that concentrations of two of the key process chemicals – sodium and potassium – did show an increase on 2003 data. However, it is unlikely that this increase could be attributed to the pollution incidents that occurred in 2007 and 2011as the areas from which the samples were taken were covered in concrete at the time of the incident (and still are), and so would have been protected to an extent. Furthermore, these incidents primarily involved the release of sodium- (and not potassium-) containing products. We accept the applicant's justification for these differences: namely that the increases are due to differences in soil sample preparation and analytical methods.

A full description of the ground investigation and comparison to baseline ground conditions is given in the application report 'Ruabon Installation, Site Condition Report for Surrender.'

Satisfactory State

We have reviewed the surrender data provided in the partial surrender application and compared this against background reference data. We consider that the data supplied is sufficient to assess the condition of the surrender area and conclude that the ground and groundwater quality in the surrender area has not deteriorated during the life of the permit, and is in a satisfactory state.

In summary, we conclude that the surrender of EPR/BV2689IE can be accepted.

Annex 1: decision checklist

This document should be read in conjunction with the application and supporting information and permit / notice.

Aspect considered	Justification / Detail	Criteria met Yes
The site		
Extent of the surrender application	The Operator has provided a plan showing the extent of the site of the facility that is to be surrendered. This is shown in Drawing 88C01080 submitted with the application. We are satisfied that the plan provided in the surrender application are consistent with the site layout and installation boundary shown in Schedule 5 of the Permit.	✓
Pollution risk	We are satisfied that the necessary measures have been taken to avoid a pollution risk resulting from the operation of the regulated facility. See **Key Issues** section.	✓
Satisfactory state	We are satisfied that the necessary measures have been taken to return the site of the regulated facility to a satisfactory state. In coming to this decision we have had regard to the state of the site before the facility was put into operation. See **Key Issues** section.	✓