

Natural Resources Wales permitting decisions

Variation

We have decided to issue the variation for Unit C IST House operated by Biotage GB Limited.

The variation number is EPR/DP3832EF/V002.

We consider in reaching that decision we have taken into account all relevant considerations and legal requirements and that the permit will ensure that the appropriate level of environmental protection is provided.

Purpose of this document

This decision document:

- explains how the application has been determined
- provides a record of the decision-making process
- shows how all relevant factors have been taken into account
- justifies the specific conditions in the permit other than those in our generic permit template.

Unless the decision document specifies otherwise we have accepted the applicant's proposals.

Structure of this document

- Key issues
- Annex 1 the decision checklist

Key issues of the decision

Emissions and monitoring

The installation produces a variety of chemicals using a batch reaction process, whereby raw materials are mixed in treatment vessels allowing chemical reactions to occur which creates new chemical compounds. This means that the volume, composition and concentration of the gases emitted from the installation via the emissions to air points vary over time, from periods where there are no emission, to periods of maximum emissions that occur when the reactions are underway.

The original permit contained emission limit values (ELVs) for emissions to air from the installation that were based on a concentration threshold. This meant that the mass of a substance within a set volume of gas (1 m³) emitted must not exceed a set value. Compliance with these ELVs was demonstrated by annual sampling and analysis of the emitted gases.

The operator has conducted a sampling and analysis exercise which shows that the concentrations of some substances in the emitted gases were above the concentration ELVs stipulated in the permit. The report states that the samples were taken at the point of maximum emissions from the reactions. However, due to the variability in emissions that results from the nature of the process, substances are not being emitted continuously at this rate and therefore concentrations in the exhaust gases will vary over the duration of the reactions.

The applicant has submitted an assessment of the impact of emissions to air using the Environment Agency's H1 software tool. This tool predicts the maximum concentration in air resulting from the emissions from an installation. It does not accurately predict ground-level concentration, which is likely to be lower due to dilution and mixing effects that occur after gases are released to atmosphere from the stack. The H1 tool therefore provides a conservative assessment of the process contributions (PC) from an installation.

The assessment provided by the applicant used:

- Measured emission levels and recorded in the sampling and analysis exercise report;
- Volumetric flow rates recorded during a recent local exhaust ventilation (LEV) exercise; and
- Representative dimensions for the installation's stacks.

We are satisfied that these input parameters are representative of the emissions profile of the installation. Furthermore, the use of the measured results from the sampling and analysis exercise represents a worst-case scenario as, for the reasons outlined above, emissions will not be at this concentration on a continuous basis and in actual fact will be lower for a proportion of the time.

Of the substances that have associated ELVs stipulated in the existing permit (hydrogen chloride, methanol, oxides of nitrogen and hydrogen bromide), the majority of long-term and short-term PCs calculated by the H1 tool were below the long- and short-term insignificance benchmarks of 1% and 10% of the respective environmental assessment levels. Consequently we are satisfied that emissions of these substances are insignificant.

The process contribution for long-term (annual) oxides of nitrogen was 1.68% of the annual nitrogen dioxide air quality objective (AQO), which is slightly above the 1% insignificance benchmark. The PC was subsequently combined with the annual ambient background for nitrogen dioxide, to produce the predicted environmental concentration (PEC). The PEC as a percentage of the annual nitrogen dioxide AQO is 39.2%, which is considerably lower than 100%. Consequently we are satisfied that emissions of oxides of nitrogen from the installation will not cause an exceedance of the annual average AQO for nitrogen dioxide.

To more accurately reflect the emissions profile of the installation we have converted the ELVs in the permit from a concentration basis to a mass emission basis. To show compliance with the new ELVs, the operator will need to demonstrate that the total mass of a substance emitted over one hour of operation is lower than the value set in the permit. Compliance will be demonstrated through annual measurement of the total mass of substance emitted over the duration of a batch reaction, averaged over a one-hour period.

The new ELVs use a time-based averaging period rather than a concentration-based spot sample and therefore stipulate the same threshold for compliance, albeit presented in a different manner. We are therefore satisfied that they represent the same level of environmental protection as the ELVs they are replacing.

Improvement conditions

We have included two improvement conditions in permit which require the operator to carry out additional monitoring of emissions to air to develop a more accurate profile of emissions over the period of the chlorosilation, sulphonation and bromination batch reactions. This is because our analysis of emissions, which was based on the qualitative descriptions of the batches supplied with the application, and the sampling and monitoring exercise carried out by the operator, and involves extrapolating the spot sample results over longer portions of the reaction, has shown that compliance with the revised hydrogen chloride and hydrogen bromide ELVs may not be possible. An accurate picture of true emissions of hydrogen chloride and hydrogen bromide across the duration of these batches is therefore required.

The first (IC 1) requires the operator to undertake an exercise of emissions sampling and testing within three months of the date of issue of this variation and to compare the results with the emissions to air benchmarks given in Annex 1 of the Environment Agency's 'How to Comply with Your Environmental Permit'

guidance documents EPR 4.02 'Speciality organic chemicals sector' and EPR 4.03 'The inorganic chemicals sector.' The second (IC 2) requires the operator to investigate methods for reducing these emissions below the ELVs and / or benchmarks where emissions have been shown through the completion of IC1 to be above these levels. IC 2 includes the requirement for the operator to investigate the applicability and efficacy of installing abatement plant.

Adding emissions points to sewer

Since the original permit was issued in May 2014, the operator has been granted a trade effluent consent from Dwr Cymru Welsh Water to discharge process effluent from the installation to sewer. This occurs through three emission points, which we have added to the permit. After the effluent is discharged to sewer it is transferred to a Dwr Cymru Welsh Water treatment facility for treatment before it is discharged to the environment under a separate environmental permit.

We have not specified ELVs for discharge of process effluent to sewer in line with our Briefing Note on setting emission limits to sewer. This Briefing Note states that where the effluent is passed to a third party for treatment, and there are no Best Available Technique Associated Emission Levels (BAT-AELs) stipulated for the activity, NRW will not set any ELVs in the permit, as we consider that Article 14 of the Industrial Emissions Directive (IED) is met by the treatment carried out by the third party in order to comply with the ELVs set on the emission at the point it enters the environment, which are stipulated in the treatment facility's separate environmental permit.

The activities carried on at the Biotage installation fall within the scope of the Large Volume Inorganic Chemicals – Solids and Other Industries (LVIC-S) and Large Volume Organic Chemicals (LVOC) Best Available Techniques reference documents (BRef). These documents have not been reviewed since the implementation of the IED and therefore do not specify BAT-AELs. The European Union is carrying out a programme of reviewing these documents to update the Best Available Techniques (BAT) conclusions and BAT-AELs. We will review the conditions of this permit as and when amended versions of these documents are published.

Annex 1: decision checklist

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

Aspect considered	Justification / Detail
Operator	
Control of the facility	We are satisfied that the applicant (now the operator) is the person who will have control over the operation of the facility after the grant of the permit. The decision was taken in accordance with EPR RGN 1 Understanding the meaning of operator.
European Directives	
Applicable directives	All applicable European directives have been considered in the determination of the application.
The site	
Extent of the site of the facility	<p>The operator has provided a plan which we consider is satisfactory, showing the extent of the site of the facility.</p> <p>A plan is included in the permit and the operator is required to carry on the permitted activities within the site boundary.</p>
Biodiversity, Heritage, Landscape and Nature Conservation	<p>The application is within the relevant distance criteria of a site of heritage, landscape or nature conservation, and/or protected species or habitat.</p> <p>Operations at the site have not changed as a result of this variation and the assessment carried out as part of the determination of the original permit application still stands and agrees with NRW agreed criteria for ruling out significant effects. Therefore it is considered not likely to have a significant effect on any Natura 2000/Ramsar sites, either alone or in-combination with other plans and projects.</p> <p>We have not formally consulted on the application. The decision was taken in accordance with our guidance.</p>
Environmental risk	<p>We have reviewed the operator's assessment of the environmental risk from the facility.</p> <p>The operator's risk assessment is satisfactory.</p>
The permit conditions	
Updating permit conditions	We have updated previous permit conditions to those in the new generic permit template as part of permit consolidation. The new

Aspect considered	Justification / Detail
during consolidation.	<p>conditions have the same meaning as those in the previous permit(s).</p> <p>The operator has agreed that the new conditions are acceptable.</p>
Improvement conditions	<p>Based on the information on the application, we consider that we need to impose improvement conditions.</p> <p>See Key Issues section.</p>
Raw materials	<p>We have specified limits and controls on the use of raw materials and fuels.</p> <p>The original permit included details of the types and quantities of raw materials to be used at the installation. However it did not include a permit condition that specified that the raw materials used at the site must be limited to the types and quantities listed.</p> <p>We have therefore included a new condition to limit raw material usage to the types and quantities specified in the permit.</p>
Incorporating the application	<p>We have specified that the applicant must operate the permit in accordance with descriptions in the application, including all additional information received as part of the determination process.</p> <p>These descriptions are specified in the Operating Techniques table in the permit.</p>
Emission limits	<p>We have decided that emission limits should be set for the parameters listed in the permit.</p> <p>See Key Issues section.</p>
Monitoring	<p>We have decided that monitoring should be carried out for the parameters listed in the permit, using the methods detailed and to the frequencies specified.</p> <p>See Key Issues section.</p>
Reporting	<p>We have specified reporting in the permit.</p>

Aspect considered	Justification / Detail
	The original permit did not specific reporting requirements for energy usage and water usage. We have specified reporting requirements in the permit for these parameters.
Operator Competence	
Environment management system	There is no known reason to consider that the operator will not have the management systems to enable it to comply with the permit conditions. The decision was taken in accordance with RGN 5 on Operator Competence.
Financial provision	There is no known reason to consider that the operator will not be financially able to comply with the permit conditions. The decision was taken in accordance with RGN 5 on Operator Competence.