



Pollution Prevention and Control

ENVIRONMENTAL PERMITTING (ENGLAND AND WALES) REGULATIONS 2016, SCHEDULE 5 PARAGRAPH 17

NOTICE OF DETERMINATION

TO: UK Battery Industrialisation Centre Ltd

OF: Council House, Earl Street, Coventry, CV1 5RR

The Warwick District Council ("the Regulator") in respect of your application for a Permit to Operate an Installation, at the premises known as UK Battery Industrialisation Centre, Rowley Road, Coventry, CV8 3AL

hereby gives you notice that in exercise of the Regulators powers set out in Regulation 13 and Schedule 5 Paragraph 12 of the Environmental Permitting (England and Wales) Regulations 2016, Warwick District Council has determined to GRANT your application subject to the conditions set out in the attached permit.

The reasons for the Regulators determination are set out in the Schedule to this notice.

You have the right to appeal against the Regulators decision to refuse a permit or to impose an environmental permit condition. Appeal must be made to the Secretary of State in accordance with Regulation 31 of the Regulations. The appeal procedure is set out in Schedule 6 of the Regulations. Written Notice of Appeal must be given not later than six months after the date of this determination.

Signed

Dated: 06/07/20

Marianne Rolfe
Head of Health and Community Protection
A person authorised to sign on behalf of the Council
Warwick District Council,
Riverside House
Milverton Hill
Royal Leamington Spa
CV32 5QF

SCHEDULE OF REASONS

Forming Part of Notice of Determination Dated 06 July 2020 In respect of Environmental Permit Application For the Installation known as UK Battery Industrialisation Centre, Rowley Road, Coventry, CV8 3AL

In respect of the decision to grant a permit

Warwick District Council has determined that certain activities carried on as part of the proposed manufacturing process fell within the scope of the Regulations and in particular Section 6.4 Part B paragraph (a) subparagraph (iv) of Schedule 1 of those Regulations and also Schedule 14 of those Regulations, being a Solvent Emission Activity under Chapter V and Annex VII of the Industrial Emissions Directive.

The proposed solvent for use in the coating process is of concern. N Methyl-2-Pyrrolidene (NMP) is classified as dangerous to fertility or the unborn child, that is to say there is a human health risk in addition to the normal environmental hazards from discharge of solvent vapours to atmosphere. That information was presented by the applicant in their submitted application.

The Industrial Emissions Directive Chapter V Article 58 says that substances having the properties of this chemical should be eliminated from the process or substituted with less harmful chemicals where possible. Otherwise an extremely low emission limit is set to protect health. A solvent reduction scheme would not be appropriate to meet the human health risk.

As part of their permit application UK Battery Industrialisation Centre Ltd (UKBIC) were required to justify why they cannot use another substance and explain what they have done/are doing to actively seek an alternative. Warwick District Council have a mandatory duty to enforce this requirement under Schedule 13 of the Environmental Permitting (England and Wales) Regulations 2016. We are expected to refuse the permit if a satisfactory justification is not provided.

Where there is no alternative substance, Warwick District Council must balance the risk of granting a permit against what can be achieved to protect health through abatement of the emission at source. UKBIC must demonstrate that they can achieve a level of abatement such that there is no off site risk to human health.

The substance is “restricted for supply “under REACH (registration, evaluation, authorisation & restriction of chemicals) from May 2020 and shall not be used in concentrations above 0.3% after May 2020 unless users take steps to ensure that exposure of workers is below a derived no effect level. However, there is a derogation until May 2024 where the solvent is used in the process of coating wires. This aspect of worker safety is a matter for Health and Safety Executive (HSE). However, it should be noted that research information accessed through consultation with HSE has informed the risk assessment process.

The Industrial Emissions Directive seeks to protect the public from the harmful effects of solvents emitted to the atmosphere and the Control of Substances Hazardous to Health Regulations aim at preventing harmful occupational exposure to solvents.

There is a clear hierarchy of control measures which is common to both the public health law and the occupational health law in order of priority. Firstly, elimination of the need to use harmful substances/solvent. This is the preferred course of action in the Directive. Secondly to substitute the solvent with a less harmful solvent, which does not risk effects on fertility or the unborn child and does not have other equally harmful attributes such as causing cancer that some alternative solvents have. Thirdly reliance upon engineering control measures to contain the hazardous substance in use, in storage and to prevent or minimise harmful emissions to the environment.

As part of the application process UKBIC were required to justify the use of organic solvent and in particular NMP. UKBIC explained that, in the making of Lithium ION battery cells, organic solvent is used as a carrier liquid to apply powdered material in solution (slurry) to metal foil to make the cathode (negative electrode). The solvent is then driven off by heating causing it to evaporate leaving a dry coating on the metal foil. This is broadly similar to other metal coating processes using organic solvents. The anode (positive electrode) is made by a coating process that uses water as the solvent.

The coating process per se cannot be eliminated as this is fundamental to making the electrodes. UKBIC explained that using water based slurry to make cathodes had been tried by others without success. They further explained that an alternative solvent n-Ethyl-2-pyrrolidone (NEP) was also trialled elsewhere, as set out in their supporting documentation. However, NEP was discounted as a viable alternative by UKBIC because of its Carcinogenic properties.

The applicant proposes to rely upon engineering control measures to prevent or minimise the emission of NMP to the environment. In the context of this permit application, to minimise emissions of NMP to air.

The potential for the coating process to give rise to harmful airborne concentrations of NMP solvent beyond the site boundary was assessed using the methodology set out in the Environment Agency's H1 Screening Tool. The limit of acceptability was taken as the Derived No Effect Limit (DNEL) for the general population in the Reach Dossier published by the European Chemicals Agency.

The key finding was that using the predicted rate of solvent emission from the cathode coating process after abatement, assuming the worst possible case with effective chimney height of 0 and worst possible atmospheric conditions for dispersion, the predicted ground level concentration beyond the boundary was four orders of magnitude below the DNEL.

In respect of the permit conditions imposed

The aim of the permit conditions is to protect public health and the wider environment from harmful emissions of the NMP solvent to air whilst allowing for study of the process and the abatement systems to facilitate gathering of data to better inform future guidance on Best Available Techniques.

The Regulator recognises that what is being permitted is not a process continuously operating over months or years with steady state conditions.

It is axiomatic that the emission limit for solvent emitted from the exhaust stack serving the coating process must have sufficient margin to ensure that the DNEL for the population at large is not exceeded. That emission limit must also allow for variations in the rate of emission through different cycles of the process.

Part 4 of Annex VII to the Industrial Emissions Directive sets a mandatory Emission Limit Value for NMP expressed as a concentration of 2mg/Nm³ at the point of discharge from the chimney. However, this only becomes mandatory if the mass emission exceeds 10g/hr. The application anticipates a mass emission of only 2.8g/hr and concentration of 2mg/Nm³ after filtration.

Guidance received from the Environment Agency in the course of formal consultation recommended setting a mass emission limit in the permit of 10g/hr with no limit on the concentration of the emission. The Agency is confident that the H1 impact assessment of no adverse effects would still hold good at this level. However, the Industrial Emissions Directive describes this as a threshold at or above which a concentration limit of 2mg/Nm³ must apply. We have therefore applied the limit as expressed by the Directive in the table of emission limits at condition 8.

Given the harmful properties of NMP and the operators reliance upon engineering control measures to keep emissions below harmful levels, it is necessary to have some form of monitoring to check that those engineering control measures are operating effectively. Hence the Regulator decided to impose an emission limit expressed as a concentration, in circumstances where the process is operating below the 10g/hr threshold. This limit of 20mg/Nm³ reflects the anticipated emission in the event of a total breakdown/failure of the carbon filter. Significant failure of the solvent condensing plant would overwhelm the carbon filter. It is still within the margin of safety for off-site exposure

The actual performance of the abatement system is untested at the scale of manufacturing proposed by the applicant hence the need for an appropriate monitoring strategy not only to demonstrate compliance with permit limits but also to study the actual performance of the solvent recovery and abatement technology. The emissions monitoring strategy adopted must reflect the pattern of use of the process equipment. This is particularly important if the equipment is used in a stop/go manner or batch process as likely to be the case here.

To this end the Regulator (Warwick District Council) requires a monitoring strategy to identify variability of emissions under the full range of different operating conditions.

This would include frequency of sampling/testing of emissions and the techniques to be used. There are validated International standard techniques for sampling of solvents in stack emissions and the analysis of those samples. These are set down in the permit.

The Environmental Permit specifies the manner in which monitoring results are to be reported to the Regulator to facilitate review of compliance with emission limit values and also the effectiveness of the abatement technology.

Fugitive Emissions of solvent to air from this installation are likely to be insignificant for health of persons off site but can add to the general environmental burden of solvents, hence the need to limit fugitive emissions. Under the Industrial Emissions Directive Fugitive Emission Limit Values must be not greater than 20% of the solvent input. The permit requires fugitive emission are determined from mass balance calculations of inputs and out puts of solvent in accordance with a solvent management plan drawn up in the manner required by the Directive.