

Environment Agency

Review of an Environmental Permit for an Installation subject to Chapter II of the Industrial Emissions Directive under the Environmental Permitting (England & Wales) Regulations 2010 (as amended)

Decision document recording our decision-making process following review of a permit

The Permit number is: EPR/RP3736WB
The Operator is: Runcorn MCP Limited
The Installation is: Runcorn Halochemicals Manufacturing
This Variation Notice number is: EPR/RP3736WB/V002
The date of issue is: 16 March 2016

What this document is about

Article 21(3) of the Industrial Emissions Directive (IED) requires the Environment Agency to review conditions in permits that it has issued and to ensure that the permit delivers compliance with relevant standards, within four years of the publication by the European Commission of updated decisions on BAT conclusions.

We have reviewed the permit for this installation against the revised BAT Conclusions for the Chlor-Alkali production industry sector published on 9 December 2013 in the Official Journal of the European Union. In this decision document, we set out the reasoning for the variation notice that we have issued.

It explains how we have reviewed and considered the techniques used by the Operator in the operation and control of the plant and activities of the installation. This review has been undertaken with reference to the decision made by the European Commission establishing best available techniques (BAT) conclusions (BATc) for Chlor-Alkali Production as detailed in document reference 2013/732/EU. It is our record of our decision-making process and shows how we have taken into account all relevant factors in reaching our position. It also provides a justification for the inclusion of any specific conditions in the permit that are in addition to those included in our generic permit template.

As well as considering the review of the operating techniques used by the Operator for the operation of the plant and activities of the installation, the variation notice takes into account and brings together in a single document all previous variations that relate to the original permit issue. Where this has not already been done, it also modernises the entire permit to reflect the conditions contained in our current generic permit template.

The introduction of new template conditions makes the Permit consistent with our current general approach and with other permits issued to installations in

this sector. Although the wording of some conditions has changed, while others have been deleted because of the new regulatory approach, it does not reduce the level of environmental protection achieved by the Permit in any way. In this document we therefore address only our determination of substantive issues relating to the new BAT Conclusions.

We try to explain our decision as accurately, comprehensively and plainly as possible. Achieving all three objectives is not always easy, and we would welcome any feedback as to how we might improve our decision documents in future.

How this document is structured

1. Our decision
2. How we reached our decision
3. The legal framework
4. Annex 1– Review of operating techniques within the Installation against BATc.
5. Annex 2 – Review and assessment of derogation request(s) made by the operator in relation to BATc which include an Associated Emission Level (AEL) value.
6. Annex 3 – Improvement Conditions
7. Annex 4 – Review and assessment of changes that are not part of the BATc derived permit review.

1 Our decision

We have decided to issue the Variation Notice to the Operator. This will allow it to continue to operate the Installation, subject to the conditions in the Variation Notice that updates the whole permit.

We consider that, in reaching our decision, we have taken into account all relevant considerations and legal requirements and that the varied permit will ensure that a high level of protection is provided for the environment and human health.

The Variation Notice contains many conditions taken from our standard Environmental Permit template including the relevant annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the Environmental Permitting Regulations and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the Notice, we have considered the techniques identified by the operator for the operation of their installation, and have accepted that the details are sufficient and satisfactory to make those standard conditions appropriate. This document does, however, provide an explanation of our use of “tailor-made” or installation-specific conditions, or where our Permit template provides two or more options.

2 How we reached our decision

2.1 Requesting information to demonstrate compliance with BAT Conclusion techniques

We issued a Notice under regulation 60(1) of the Environmental Permitting (England and Wales) Regulations 2010 (a Regulation 60 Notice) on 22/05/2015 requiring the Operator to provide information to demonstrate where the operation of their installation currently meets, or how it will subsequently meet, the revised standards described in the relevant BAT Conclusions document.

The Notice required that where the revised standards are not currently met, the operator should provide information that

- describes the techniques that will be implemented before 9 December 2017 (4 years from BATc publication date), which will then ensure that operations meet the revised standard, or
- justifies why standards will not be met by 9 December 2017 (4 years from BATc publication date) and confirms the date when the operation of those processes will cease within the installation or explains why the revised BAT standard is not applicable to those processes, or
- justifies why an alternative technique will achieve the same level of environmental protection equivalent to the revised standard described in the BAT Conclusions.

Where the Operator proposed that they were not intending to meet a BAT standard that also included a BAT Associated Emission Level (BAT AEL) described in the BAT Conclusions Document, the Regulation 60 Notice required that the Operator make a formal request for derogation from

compliance with that AEL (as provisioned by Article 15(4) of IED). In this circumstance, the Notice identified that any such request for derogation must be supported and justified by sufficient technical and commercial information that would enable us to determine acceptability of the derogation request.

The Regulation 60 Notice response from the Operator was received on 21 August 2015. We considered it was in the correct form and contained sufficient information for us to begin our determination of the permit review. The operator did not ask for derogation of any aspect of the review.

The Operator made no claim for commercial confidentiality although they requested that the reporting requirement (condition 4.2.2, BAT 16) for spent sulphuric acid disposal be limited to a pass/fail remark to avoid disclosure of the plant production capability. We agreed to this request as a quantitative validation can be made on site by the Agency compliance officer. We have not received any information in relation to the Regulation 60 Notice response that appears to be confidential in relation to any party.

2.2 Review of our own information in respect to the capability of the installation to meet revised standards included in the BATc document

Based on our records and previous experience in the regulation of the installation we consider that the operator will be able to comply with the techniques and standards described in the BATc other than for those techniques and requirements described in BATc: BAT 7, BAT 8, BAT 13 and BAT 16, by 9 December 2017 (4 years from the BATc publication date). In relation to BATc: BAT 7, BAT 8, BAT 13 and BAT 16, we agree with the operator in respect of their stated capability as recorded in their regulation 60 Notice response that they cannot currently achieve the criteria and have taken steps to be able to ensure they are delivered by 9 December 2017. We have included Improvement Conditions IC2 and IC3 in the Notice to ensure that the requirements of the BAT Conclusions are delivered before this date.

2.3 Requests for Further Information during determination

Although we were able to consider the Regulation 60 Notice response generally satisfactory at receipt, we did in fact need some clarification of the information provided in the response in order to complete our permit review assessment. An email from the operator containing the clarification was received on 1 March 2016.

3 The legal framework

The Variation Notice will be issued under Regulations 18 and 20 of the EPR. The Environmental Permitting regime is a legal vehicle which delivers most of the relevant legal requirements for activities falling within its scope. In particular, the regulated facility is:

- an installation as described by the IED;
- subject to aspects of other relevant legislation which also have to be addressed.

We consider that, in issuing the Variation Notice, it will ensure that the operation of the Installation complies with all relevant legal requirements and

that a high level of protection will be delivered for the environment and human health.

We explain how we have addressed specific statutory requirements more fully in the rest of this document.

Annex 1: decision checklist regarding relevant BAT Conclusions

BAT Conclusions for the Chlor-Alkali production industrial sector were published by the European Commission on 9 December 2013. There are 17 BAT Conclusions. This annex provides a record of decisions made in relation to each relevant BATc applicable to the installation and how compliance with each conclusion has been addressed in the notice. This annex should be read in conjunction with the Variation Notice.

Our assessment of the Narrative BAT Conclusions based upon the information provided by the operator in his response to the Regulation 60 Notice, was carried out in accordance with our technical guidance note 368_15 Narrative BAT Determination Matrix dated 20 January 2016. Narrative BAT Conclusions are those which have no BAT-AELs set.

In terms of the first stage of the narrative BATc assessment guidance:

1. The Environment Agency sector group identified none of the 17 BATc as a priority for the chlor-alkali sector or this installation in particular; and
2. Neither the sector group nor the compliance officer identified any of the BATc, not already identified by the operator in his response to the notice, where we believe this installation is possibly not in compliance; and
3. The status of each BATc reported by the operator in his response to the notice is indicated in the following tables.

The overall status of compliance with the BAT conclusion is indicated in the tables as

- Not Applicable
- Currently Compliant
- Compliant in the future (within 4 years of publication of BAT conclusions)
- Not Compliant

Summary of status types	Summary of the status of each BAT Conclusion requirement
BAT Conclusions that are not applicable to this installation	BAT 2, BAT 3, BAT 9.
BAT Conclusions where we accept the operator's Reg 60 notice response that they are currently compliant and no further explanation is required.	BAT 1, BAT 4, BAT 5, BAT 6, BAT 7 (in part), BAT 8 (in part), BAT 10, BAT 11, BAT 12, BAT 13 (in part), BAT 14, BAT 15, BAT 17.
BAT Conclusions where improvements will be undertaken on site within the 4 year period in order to achieve compliance with the narrative and/or BAT-AEL prior to the 4 year deadline	<p>BAT 7 (IC3 requires the operator to periodically report on the progress made in achieving the BAT 7 monitoring criteria techniques concerning discharges to air and water)</p> <p>BAT 8 (IC2 requires the operator to periodically report on the progress made in achieving the chlorine to air BAT-AEL.)</p> <p>BAT 13 (IC2 requires the operator to periodically report on the progress made in achieving the free chlorine in discharged water BAT-AEL.)</p> <p>BAT 16 (IC2 requires the operator to periodically report on the progress made in achieving alternative disposal routes in order to meet the waste sulphuric acid disposal BAT-AEL)</p>

BAT Conclusion No	Summary of BAT Conclusion requirement for Chlor-Alkali Industry	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
1	BAT for the production of chlor-alkali is to use one or a combination of the techniques given below. The mercury cell technique cannot be considered BAT under any circumstances. The use of asbestos diaphragms is not BAT.	CURRENTLY COMPLIANT: Bipolar membrane cell technology is employed for chlor-alkali production. BAT addressed in permit by operating techniques condition 2.3.1.
2	In order to reduce emissions of mercury and to reduce the generation of waste contaminated with mercury during the decommissioning or conversion of mercury cell plants, BAT is to elaborate and implement a decommissioning plan that incorporates all of the listed features [1].	NOT APPLICABLE Mercury not used.
3	In order to reduce emissions of mercury to water during the decommissioning or conversion of mercury cell plants, BAT is to use one or a combination of the listed techniques [1].	NOT APPLICABLE Mercury not used.
4	In order to reduce the generation of waste water, BAT is to use a combination of the listed techniques.	CURRENTLY COMPLIANT: Steam condensate recycled. Waste caustic soda used to produce saleable sodium hypochlorite. Filtration of the hypo stream by dry cake method. BAT addressed in permit by operating techniques condition 2.3.1.
5	In order to use energy efficiently in the electrolysis process, BAT is to use a combination of the listed techniques.	CURRENTLY COMPLIANT: High performance membranes are used Diaphragms are not used so asbestos is not an issue. High performance electrodes and coatings used. High purity brine used. BAT addressed in permit by operating techniques condition 2.3.1.
6	In order to use energy efficiently, BAT is to maximise the use of the co-produced hydrogen from the electrolysis as a chemical reagent or fuel.	CURRENTLY COMPLIANT: Co-produced hydrogen is supplied as a product for off-site sale. It is burned on its own or as a co-fuel for the on-site large combustion plant. It is burned in the on-site synthesiser to produce hydrogen chloride. Much reduced volume of excess hydrogen is vented to atmosphere.

		BAT addressed in permit by operating techniques condition 2.3.1.
7	<p>BAT is to monitor emissions to air and water by using monitoring techniques in accordance with EN standards with at least the minimum frequency given below. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.</p>	<p>CURRENTLY COMPLIANT:</p> <p><u>In respect of chlorides, sulphates, halogenated organic compounds and relevant heavy metals in the brine purge:</u></p> <p>These substances originate from the salt deposits and the river water used for salt solution mining. This plant is operated on a once-through brine system so that the raw brine passes from storage, through the electrolyzers and is purged for disposal to the canal. There is no brine recycling loop and there is no opportunity for the contaminants to accumulate in the process. As the process cannot influence the incoming or outgoing level of contamination we have decided to exclude the requirement of monitoring for these substances. We consider that these substances at these concentrations cannot cause harm in the aqueous environment.</p> <p>In respect of the monitoring of the other listed parameters except the following...</p> <p>COMPLIANT IN THE FUTURE:</p> <p>The following monitoring deviations are to be addressed.</p> <p><u>For discharges to air</u></p> <ul style="list-style-type: none"> Chlorine dioxide (ClO₂) is currently not monitored as it is too unstable to capture with the available techniques. The BATc review document noted, at the time of publication, that there were no standards available for monitoring this substance. <p>The method used by the operator is one that analyses all gaseous compounds containing chlorine and report them in total as chlorine. This is the requirement of BAT 7 and speciation is not required.</p> <p><u>For discharges to water,</u></p> <ul style="list-style-type: none"> MCP Ltd monitors free chlorine by EN ISO 7393-3, not -1 or -2 as required by the BATc. According to our Monitoring Guidance Note M18, methods 7393-1 and 7393-2 can measure to 0.03 – 5 mg/l free chlorine in water, whereas 7393-3 can only measure to 0.7 – 15 mg/l. As the new limit will be 0.2 mg/l it is evident that EN ISO 7393-3 unsuitable for the measurement of free chlorine at a lower level. The operator is required to address this issue. <p>BAT is addressed in the permit by monitoring condition 3.5.1.</p> <p>Table S3.1 shows a reduced frequency of spot sampling of Cl₂ and HCl to air (from 3-monthly in the predecessor permit to the</p>

		<p>BATc requirement of yearly). As these substances are also monitored continuously, this is not considered an issue.</p> <p>IC3 requires the operator to periodically report on the progress made in achieving the BAT 7 monitoring criteria techniques concerning discharges to air and water.</p>
8	<p>In order to reduce channelled emissions of chlorine and chlorine dioxide to air from the processing of chlorine, BAT is to design, maintain and operate a chlorine absorption unit that incorporates an appropriate combination of the listed features.</p>	<p>CURRENTLY COMPLIANT:</p> <p>In respect of the use of a chlorine absorption unit, all listed features are used except (para ii) the hydrogen peroxide dosing and scrubbing equipment is not used to reduce chlorine dioxide emissions.</p> <p>The plant is top-tier COMAH and a detailed safety assessment has been carried out.</p> <p>COMPLIANT IN THE FUTURE:</p> <p>In respect of the BAT-AEL, the emission limit for chlorine/chlorine dioxide of 0.2-1.0 mg/m³ cannot yet be met.</p> <p>In the permit, only the emission of chlorine to air when measured by spot sampling has been limited, in accordance with the BATc. Emission of chlorine when continuously monitored is not limited and should be used as a process control.</p>
		<p>BAT addressed in permit by operating techniques condition 2.3.1.</p> <p>BAT-AEL limit addressed in emissions condition 3.1.2.</p> <p>IC2 requires the operator to periodically report on the progress made in achieving the chlorine to air BAT-AEL.</p>
9	<p>The use of carbon tetrachloride for the elimination of nitrogen trichloride or the recovery of chlorine from tail gas is not BAT.</p>	<p>NOT APPLICABLE</p> <p>This technique not used.</p>
10	<p>The use of refrigerants with a high global warming potential, and in any case higher than 150 (e.g. many hydrofluoro-carbons (HFCs)), in new chlorine liquefaction units cannot be considered BAT.</p>	<p>CURRENTLY COMPLIANT:</p> <p>Water is used as the refrigerant to liquefy chlorine.</p>
		<p>BAT addressed in permit by operating techniques condition 2.3.1.</p>
11	<p>In order to reduce emissions of pollutants to water, BAT is to use an appropriate combination of the listed techniques.</p>	<p>CURRENTLY COMPLIANT:</p> <p>Process integrated techniques include the use of waste caustic from the scrubbing system to produce saleable sodium hypochlorite and the sale of 77% hydrochloric acid from the chlorine drying system.</p> <p>Final waste water treatment includes chlorine removal which involves mechanical and physical techniques (vacuum dechlorination).</p>
		<p>BAT addressed in permit by operating techniques condition 2.3.1.</p>

12	In order to reduce emissions of chloride to water from the chlor-alkali plant, BAT is to use a combination of the techniques given in BAT 4.	<p>NOT APPLICABLE</p> <p>Brine is passed through the plant on a once-through basis to, eventually, a saline environment, the River Mersey Estuary</p> <p>BAT addressed in permit by operating techniques condition 2.3.1.</p>
13	In order to reduce emissions of free chlorine to water from the chlor-alkali plant, BAT is to treat waste water streams containing free chlorine as close as possible to the source, to prevent stripping of chlorine and/or the formation of halogenated organic compounds, by using one or a combination of the listed techniques.	<p>CURRENTLY COMPLIANT:</p> <p>Acidic decomposition is used to release chlorine for recovery by vacuum dechlorination. Chemical reduction with sodium bisulphite treats the stream prior to discharge</p> <p>COMPLIANT IN THE FUTURE:</p> <p>In respect of the BAT-AEL, the emission limit for free chlorine of 0.05-0.2 mg/l cannot yet be met. An investigation by the operator is in progress to understand why. An improvement condition has been included in the permit.</p> <p>BAT addressed in permit by operating techniques condition 2.3.1.</p> <p>IC2 requires the operator to periodically report on the progress made in achieving the free chlorine in discharged water BAT-AEL.</p>
14	In order to reduce emissions of chlorate to water from the chlor-alkali plant, BAT is to use one or a combination of the listed techniques.	<p>CURRENTLY COMPLIANT:</p> <p>High performance membranes are used</p> <p>High performance coatings on the electrodes used.</p> <p>High purity brine used.</p> <p>Brine acidification is used.</p> <p>BAT addressed in permit by operating techniques condition 2.3.1.</p>
15	In order to reduce emissions of halogenated organic compounds to water from the chlor-alkali plant, BAT is to use a combination of the listed techniques.	<p>CURRENTLY COMPLIANT:</p> <p>Incoming brine is purified by ion exchange to remove organic compounds.</p> <p>The selection of equipment (cells, valves, pumps etc) has been made to minimise the risk of organics leaching into the system.</p> <p>BAT addressed in permit by operating techniques condition 2.3.1.</p>
16	In order to reduce the quantity of spent sulphuric acid sent for disposal, BAT is to use one or a combination of the techniques given below. The neutralisation of spent sulphuric acid from chlorine drying with virgin reagents is not BAT.	<p>COMPLIANT IN THE FUTURE:</p> <p>Currently ~94% of spent sulphuric acid is sold and this is likely to increase following the closure of the mercury cells elsewhere on site. However if there are no customers for this product the BAT-AEL of $\leq 0.1 \text{ kg H}_2\text{SO}_4$ /tonne chlorine produced may not be achieved.</p> <p>BAT addressed in permit by operating techniques condition 2.3.1.</p> <p>IC2 requires the operator to periodically report on the progress made in achieving</p>

		alternative disposal routes in order to meet the waste sulphuric acid disposal BAT-AEL
17	In order to reduce contamination of soil, groundwater and air, as well as to halt pollutant dispersion and transfer to biota from contaminated chlor-alkali sites, BAT is to devise and implement, a site remediation plan that incorporates all of the listed features.	<p>CURRENTLY COMPLIANT:</p> <p>There has been no decision to decommission the plant; there is therefore no requirement at this stage to prepare a full site remediation plan.</p> <p>Condition 3.1.5 of the permit requires periodic monitoring of groundwater and soil.</p> <p>The operator has carried out an extensive investigation of the condition of the ground on which this activity is carried out (there is over 100 years of chemical plant operation on this site) and maintains a site protection and monitoring programme and reports routinely to the Environment Agency on findings.</p> <p>The operator also maintains an emergency response and monitoring plan in order to manage incidents in the event of such occurrences.</p>
		BAT addressed in permit by management condition 1.1.1.

Note [1]: In this table “listed features” and “listed techniques” means the features or techniques listed for each of the specified BAT Conclusions in the BAT Conclusions document 2013/732/EU.

Where relevant and appropriate, we have incorporated the techniques described by the Operator in their Regulation 60 Notice response as specific operating techniques required by the permit, through their inclusion in Table S1.2 of the Variation Notice.

Annex 2: Assessment, determination and decision where an application(s) for Derogation from BAT Conclusions with associated emission levels (AEL) has been requested.

The Operator did not request derogation from compliance with any AEL included within the BAT Conclusions as part of their Regulation 60 Notice response.

Annex 3: Improvement Conditions

Based on the information in the Operator’s Regulation 60 Notice response and our own records of the capability and performance of the installation at this site, we consider that we need to set improvement conditions so that the outcome of the techniques detailed in the BAT Conclusions are achieved by the installation. These improvement conditions are set out below – justification for them is provided at the relevant section of the decision document (Annex 1, above).

Reference	Improvement Condition	Completion date
IC2	The operator shall submit, for approval by the Environment Agency, a report setting out progress to achieving the BAT	Progress

Reference	Improvement Condition	Completion date
	<p>conclusion Associated Emission Levels (BATc AEL) where BAT is currently not achieved, but will be achieved before 9 December 2017. The report shall include, but not be limited to, the following:</p> <ol style="list-style-type: none"> 1. Current performance against the BATc AEL. 2. Methodology for reaching the AELs. 3. Associated targets / timelines for reaching compliance by 9 December 2017. <p>The report shall address the following BAT Conclusions:</p> <ul style="list-style-type: none"> • BAT 8, BAT 13 and BAT 16 	<p>reports by</p> <p>09/06/16</p> <p>09/12/16</p> <p>09/06/17</p>
IC3	<p>The operator shall submit, for approval by the Environment Agency, a report setting out progress to achieving the 'Narrative' BAT where BAT is currently not achieved, but will be achieved before 9 December 2017. The report shall include, but not be limited to, the following:</p> <ol style="list-style-type: none"> 1. Methodology for achieving BAT. 2. Associated targets / timelines for reaching compliance by 9 December 2017. <p>The report shall address the following BAT Conclusion:</p> <ul style="list-style-type: none"> • BAT 7. 	<p>Progress reports by</p> <p>09/06/16</p> <p>09/12/16</p> <p>09/06/17</p>

Annex 4: Review and assessment of changes that are not part of the BAT Conclusions derived permit review.

Condition 2.2.2.2 in the core part of the superseded permit EPR/RP3736WB/T001, relating to the annual mass emission limit of heavy metals to water from outfall W46, has been deleted because it is not relevant to this activity.

Condition 2.2.2.4 in Annex A of the superseded permit EPR/RP3736WB/T001, relating to unusual discharges from W46, has been deleted because it is not relevant for the discharge from a single outfall.

Condition 3.1.3 (indicative targets) and the definition in schedule 6 are retained from earlier versions of the permit. This condition requires the operator to use his best endeavours to achieve emission levels better than the emission limit values in several areas of operation.

Condition 3.1.5 (periodic groundwater monitoring) has been added in compliance with IED Chapter II requirements.

Updated conditions 4.3.1 and 4.3.2 (relating to notifications) have replaced the existing conditions in compliance with IED Chapter II requirements.

Improvement condition IC1 in table S1.3 has been deleted as the requirement is no longer relevant to the situation of this activity. This condition was imposed when the plant was under different ownership within the wider installation.

Table S3.2 (emission limits and monitoring requirements to water) has been modified to reduce:

- the Suspended Solids limit from 150 mg/l to 75 mg/l (target from 100 to 50 mg/l),

- the total organic compounds limit from 250 mg/l to 50 mg/l (target from 170 to 30 mg/l)

Historically, the operator has been able to achieve these levels and we consider the reductions demonstrate a continuing improvement in environmental protection by the operator.

The Common Waste Water (CWW) BAT review has not yet been published (although it is imminent) and has not been included in the Chlor-Alkali Production review.

We considered the Marine Policy and Marine Plan, in accordance with our guidance *Marine Planning: a guide for our regulatory decision making, OI 65_15* because this activity discharges effluent indirectly into the River Mersey and its Estuary. There is no Plan yet for this part of the North West Coast of the UK. We consider that the variation satisfies the requirements of the Policy because:

- The conditions in the variation comply with the BRef Note.
- This is an existing activity and the purpose of the variation is to reduce the levels of pollution to the environment (including the marine environment). The overall impact on the marine environment is therefore one of improvement.