Notice of variation with introductory note

Environmental Permitting (England & Wales) Regulations 2010

Runcorn Halochemicals Manufacturing

Mexichem UK Limited
PO Box 9
Rocksavage Site
Runcorn
Cheshire
WA7 4JE

Variation application number

EPR/QP3535TE/V002

Permit number

EPR/QP3535TE

Runcorn Halochemicals Manufacturing
Permit number EPR/QP3535TE

Introductory note

This introductory note does not form a part of the notice

The following notice gives notice of the variation of an environmental permit.

Purpose of variation EPR/QP3535TE/V002
The plant manufacturing chlorodifluoromethane was shut down in 2009. This variation is to enable its re-introduction as a manufactured product on the newly designated HCFC 22 Plant. Although the basic chemistry and reaction mechanisms are unchanged the opportunity has been taken to ensure the new plant complies with modern standards. Accordingly, improvements to secondary containment, materials of construction, emission point reductions, fugitive emission control, noise control and process controls have been made.

The HCFC 22 plant carries out the following activities under the 2010 regulations which are already listed in the permit for other plants in the installation:

Section 4.1 A(1)(a)(vi) – "Producing organic chemicals such as ... organic compounds containing halogens ...";

Section 4.2 A(1)(b) – "Any manufacturing activity which is likely to ... release into the air ... hydrogen halides or ... halogens ..." .

There have been improvements in operation since the permit was issued and some annual mass emission limits have been reduced to reflect this.

The schedules specify the changes made to the original permit.

The status log of a permit sets out the permitting history, including any changes to the permit reference number.

Status log of the permit		
Description	**Date**	**Comments**
Application BS5479IG *(A001)* (under PPC 2000)	08/12/04	Application for permit by INEOS Fluor Ltd
Permit issued	21/07/05	
Variation request KP3932MM (*V002*) (under PPC 2000)	23/11/06	To include WCL
Variation determined KP3932MM	15/01/08	Varied permit issued
Variation request EPR/BS5479IG/V003 (under EPR 2010)	06/04/10	Arcton 22 plant shutdown
Variation determined EPR/BS5479IG	27/07/10	Varied permit issued
Application to transfer EPR/QP3535TE/T001	28/04/10	Application to transfer the permit in full to Mexichem UK Limited.
Transfer Issued EPR/QP3535TE/T001	27/07/10	Full transfer of permit complete
Application for variation EPR/QP3535TE/V002	31/01/12	Re-introduce HCFC 22 plant
Additional information received	29/03/12	Clarification of aspects of the application
Variation determined EPR/QP3535TE	10/04/12	Varied permit issued.

Other Part A installation permits relating to this installation		
Operator	**Permit Number**	**Date of Issue**
INEOS Vinyls UK Ltd	BM0567IF	01/07/05
INEOS Chlor Ltd	BS5428IP	21/07/05
INEOS Enterprises Ltd	HP3534PP	21/07/05

End of introductory note

Notice of variation

Environmental Permitting (England and Wales) Regulations 2010

The Environment Agency in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2010 varies

Permit number
EPR/QP3535TE

issued to:

Mexichem UK Limited ("the operator")

whose registered office is

The Heath Business and Technical Park
Runcorn
Cheshire
WA7 4QX

company registration number **07088219**

to operate part of a regulated facility at

Rocksavage Site
Runcorn
Cheshire
WA7 4JE

to the extent set out in the schedules.

The notice shall take effect from 10/04/12

Name	Date
B Graham	**10 April 2012**

Authorised on behalf of the Environment Agency

Schedule 1 – conditions to be deleted

None

Schedule 2 – conditions to be amended

The following conditions are amended as a result of the application made by the operator

Condition 2.1 is amended to include the reference to the HCFC 22 Plant:

2.1 In-Process Controls

In respect of in-plant controls, the conditions in the section 2.1 of each of Annexes A to F inclusive and H to J inclusive apply to the HCFC 22, HF3, CTF, Chlorine/Bromine Absorption, Klea 125, Zephex 134a, Vents Treatment, Central Effluent plants and the West Clifton Lagoon.

Condition 2.2.1 is amended to include the reference to the HCFC 22 Plant:

2.2.1 Emissions to Air, (including heat, but excluding Odour, Noise or Vibration) from Specified Points

In respect of these emissions, the conditions in the section 2.2.1 of each of Annexes A to F inclusive and H to J inclusive apply to the HCFC 22, HF3, CTF, Chlorine/Bromine Absorption, Klea 125, Zephex 134a, Vents Treatment, Central Effluent plants and the West Clifton Lagoon.

Condition 2.2.1.1 is amended to include the reference to the HCFC 22 Plant:

2.2.1.1 Total emissions to air from plants specified in Table 2.2.1.1 in any year of a substance listed in that Table shall not exceed the relevant limit in that Table.

Table 2.2.1.1 Annual limits to air [1]

Plants	Substances	Limits Tonnes
HCFC 22, Klea 125, Zephex 134a, Chlorine/ Bromine Absorption, VPT, CTF, CEP	Various VOCs (Chlorofluoropicolines, trichloroethylene, perchloroethylene, chloroform, HCFC 1122, and substances with Ozone Depletion Potential, ODP > 0.2 te/te CFC11 (ie typically CFC11, 12, 112, 113, 114 and 115))	3
	Substances with Global Warming Potential (GWP) > 10 te/te CO_2 (ie typically HCFC 21, 22, 123, 124, 132b, 133a, HFC23, 32, 125, 134a, 143a and Halothane)	40 [2]

Note [1]: limits include fugitive emissions

Note [2]: emissions from the HCFC 22 Plant shall not be included in this limit until the completion of commissioning of this plant.

Condition 2.2.2.6 is amended by a new limit

2.2.2.6 Total emissions to water of a substance listed in Table 2.2.2.6 shall not exceed the relevant limit in that Table

Table 2.2.2.6 Annual mass emission limits to water from Outfalls RSV-5 and RSV-7	
Substance	**Limit**
Total halogenated hydrocarbons	350 kg

Condition 2.10.1 is amended to include the reference to the HCFC 22 Plant:

2.10.1 The Operator shall maintain and implement an emissions monitoring programme which ensures that emissions are monitored from the specified points, for the parameters listed in, and to the frequencies and methods described in sections 2.10.1 of each of the following parts of the application:

HCFC 22 Plant
HF3 Plant
CTF Plant
Chlorine/Bromine Absorption Plant
Klea 125 Plant
Vents Treatment Plant
Central Effluent Plant
West Clifton Lagoon

Unless otherwise agreed in writing, and that the results of such monitoring are assessed. The programme shall ensure that monitoring is carried out under an appropriate range of operating conditions.

Condition 4.1.2 refers to Schedule 2 - *Reporting of monitoring data*, of the core part of the permit, which is amended by the inclusion of the monitoring data reporting requirements for the HCFC 22 Plant:

Schedule 2 – Reporting of monitoring data

Monitoring data shall be reported for each plant as follows:

- For the HCFC 22 Plant, in accordance with Table SA(1) in Schedule A(1) of Annex A of this Permit.
- For the HF3 Plant, in accordance with Table SB(1) in Schedule B(1) of Annex B of this Permit.
- For the CTF Plant, in accordance with Table SC(1) in Schedule C(1) of Annex C of this Permit.
- For the Chlorine/Bromine Absorption Plant, in accordance with Table SD(1) in Schedule D(1) of Annex D of this Permit.
- For the Klea 125 Plant, in accordance with Table SE(1) in Schedule E(1) of Annex E of this Permit.
- For the Zephex 134a Plant, in accordance with Table SF(1) in Schedule F(1) of Annex F of this Permit.
- For the Vents Treatment Plant, in accordance with Table SH(1) in Schedule H(1) of Annex H of this Permit.
- For the Central Effluent Plant, in accordance with Table SI(1) in Schedule I(1) of Annex I of this Permit.
- For the West Clifton Lagoon, in accordance with Tables SJ(1) and in Schedule J(1) of Annex J of this Permit.

In respect of condition 2.10.5 there is no requirement for the provision of permanent means of access to enable sampling/monitoring to be carried out in relation to the emission points in the tables referred to in this Schedule.

Condition 4.1.2 refers to Schedule 3 - *Forms to be used,* of the core part of the permit, which is amended by the inclusion of the reporting form requirements for the HCFC 22 Plant:

Schedule 3 – Forms to be used

Table S3: Reporting Forms

Media / parameter	Plant	Form Number
Air	HCFC 22	HCFC22/A1, HCFC22/AR1
	HF3	HF3/A1, HF3/AR1
	CTF	CTF/A1, CTF/AR1
	Chlorine/Bromine Absorption	CBA/A1, CBA/AR1
	Klea 125	KLEA/A1, KLEA/AR1
	Zephex 134a	ZEPHEX/A1, ZEPHEX/AR1
	Vents Treatment Plant	VTP/A1, VTP/AR1
	Central Effluent Plant	CEP/A1, CEP/AR1
	Mexichem Ltd Installation	IFL/AR1
Water	Mexichem Ltd Installation	IFL/W1, IFL/W2, IFL/AR1
	West Clifton Lagoon	WCL/W1
Energy	Mexichem Ltd Installation	IFL/W3, IFL/T1
Water usage	Mexichem Ltd Installation	IFL/W3, IFL/T1
Performance indicators	HCFC 22	HCFC22/A1, HCFC22/AR1
	HF3	HF3/A1, HF3/AR1
	CTF	CTF/A1, CTF/AR1
	Chlorine/Bromine Absorption	---
	Klea 125	KLEA/A1, KLEA/AR1
	Zephex 134a	ZEPHEX/A1, ZEPHEX/AR1
	Vents Treatment Plant	VTP/A1, VTP/AR1
	Central Effluent Plant	CEP/A1, CEP/AR1
	West Clifton Lagoon	WCL/GW1
Groundwater	West Clifton Lagoon	WCL/GW1

Condition 4.1.3 is amended to include the reference to the Schedule A(2) of Annex A

4.1.3 The Operator shall submit to the Agency reports on the performance of the individual plants of the Mexichem UK Limited part of the Permitted Installation over the previous year, by 31 January each year, and provide the information listed in the tables indicated in each of the Schedules A(2), B(2), C(2), D(2), E(2), F(2), H(2), I(2) and J(2) attached to Annexes A,B,C,D,E,F,H,I and J respectively to this permit, assessed at any frequency specified therein, and using the forms specified in Table S3 to Schedule 3 of the Core of this Permit.

Schedule 3 – conditions to be added

Condition 1.4.3 is added to the core part of the permit:

1.4.3 The Operator shall complete the improvements specified in Table 1.4.3 by the date specified in that table, and shall send written notification of the date of completion of each requirement to the Agency within 14 days of the completion of each such requirement.

Table 1.4.3: Improvement programme (in respect of the Mexichem Ltd part of the Installation, as a whole)

Reference	Requirement	Date
V002/(core)IC1	The operator shall:	
	• analyse the causes of all emissions to air from the Mexichem UK Ltd part of the installation;	01/01/13
	• on the basis of this analysis, agree with the Agency the scope and then complete a programme of work that results in a reduction of the annual emissions to levels that enable a significant reduction of the emission limits specified in condition 2.2.1.1	01/01/15

Annex A: HCFC 22 Plant – Specific Conditions is added to the permit (attached)

Annex A: HCFC 22 Plant – Specific Conditions

Process description (this description does not form part of the Permit)

HCFC 22 is the trade name for chlorodifluoromethane. It is manufactured by the fluorination of chloroform, typically supplied by INEOS ChlorVinyls Ltd from a plant on the Runcorn Halochemicals Installation, using hydrogen fluoride made on an adjacent plant. The reaction takes place at a temperature of about 85^{o}C and pressure of up to 11 barg in the presence of catalyst. The plant can make approximately 90 tonnes per day HCFC 22.

A range of halogenated organic products is formed which are separated by condensation and distillation in a train of columns. The main overall reaction is as follows:

$2HF$	+	$CHCl_3$	→	$CHClF_2$	+	$2HCl$
Hydrogen fluoride		Chloroform		HCFC 22		Hydrogen chloride

Some unreacted and under-fluorinated raw materials are separated and recycled back to the reactor. Hydrogen chloride off-gas is absorbed in water to produce hydrochloric acid as a product for sale.

The gaseous by-product trifluoromethane (HFC 23) has a high global warming potential and is vented to the Vents Treatment Plant (VTP) for destruction. Aqueous by-products are also sent to the VTP for treatment before being destroyed.

In the event the VTP is unavailable to accept vented gases from the HCFC 22 Plant, vents are collected and diverted to a vent capture system which contains and prevents escape of organic and acidic material to air. There is a remote chance the vent capture system needs to be bypassed and for safety reasons the vents can be opened to air. As there are no routine emissions to air there are no emission limits. The facility annual mass release limits apply for those occasions there is release to air.

Plant drains and condensate are passed to the East End Effluent Plant (EEEP), considered part of the HCFC 22 plant, prior to being pumped to the Central Effluent Plant (CEP) for treatment.

1.4 Improvement Programme

1.4.1 The Operator shall complete the improvements specified in Table A.1.4.1 by the date specified in that table, and shall send written notification of the date of completion of each requirement to the Agency within 14 days of the completion of each such requirement.

Table A.1.4.1: Improvement programme

Reference	Requirement	Date
V002/(A)IC1	The Operator shall • carry out a programme of monitoring at the emission point HCFC22-02 of the chloroform storage tank to determine the level of fugitive emissions from that point over a 12 month period; • assess the environmental impact of the emissions; • where appropriate, propose and implement measures to reduce the emissions; • submit a written summary report to the Agency of the findings of the monitoring programme, impact assessment and proposals for improvement.	Within 15 months of commissioning the HCFC 22 Plant
V002/(A)IC2	The operator shall submit a written post-commissioning report to the Environment Agency which shall include: • a review of performance of the facility against the conditions of the permit as varied. • details of procedures developed during commissioning for achieving and demonstrating satisfactory process control and covering the range of designed operating rates.	Within 4 months of the completion of commissioning the HCFC 22 Plant

1.6 Pre-Operational Conditions

1.6.1 The activities shall not be brought into operation until the measures specified in table A 1.6.1 have been completed.

Table A.1.6.1: Pre-Operational Conditions

Reference	Requirement
V002/PO1	Prior to the commencement of commissioning, in respect of old equipment restored for use on the HCFC22 Plant the failure of which could lead to an adverse affect on the environment, the Operator shall; • identify the restored old equipment; • demonstrate this equipment satisfies the criteria of being fit for the purpose required of it and of its use meeting appropriate BAT standards; • submit a written summary report to the Agency describing the demonstration.

2 Operating Conditions

2.1 In-Process Controls

2.1.1 The Permitted Installation shall, subject to the conditions of this Permit, be operated using the techniques and in the manner described in the documentation specified in Table A.2.1.1, or as otherwise agreed in writing by the Agency in accordance with conditions 1.5.1 and 1.5.2 of the Core section of this Permit.

Table A.2.1.1: Operating techniques (HCFC 22 Plant)

Description	Parts	Date Received
Application for variation EPR/QP3535TE/V002	The techniques described Section 2: Techniques Appendix 3: Shutdown protective systems Appendix 5: Fugitive emission management plan Appendix 10: Potential for future contamination	31/01/12
Additional information	Item 2 of the additional information supplied by the operator	29/03/12

2.2 Emissions

2.2.1 Emissions to Air, (including heat, but excluding Odour, Noise or Vibration) from Specified Points

2.2.1.1 Emissions to air from the emission points in Table A.2.2.1.1 shall only arise from the sources specified in that table.

Table A.2.2.1.1: Emission points to air (HCFC 22 Plant)

Emission point	Source
HCFC22-01	Main plant vents (Normally vents to VTP)
HCFC22-02	Chloroform stock tank vent (protected by pressure/vacuum valve)
HCFC22-03A/B	HCl stock tank vent scrubbers A&B (Normally vents to VTP)

Annex A: Schedule A(1) – Reporting of monitoring data: HCFC 22 Plant

Parameters for which reports shall be made, in accordance with conditions 4.1.2 and 4.1.3 of this Permit, are listed below.

Table SA(1): Reporting of monitoring data (HCFC 22 Plant)			
Parameter	**Emission point**	**Reporting period**	**Periods begin**
Performance parameters as defined in Schedule A(2), Table SA(2.2)	---	3 Months	1 January, 1 April 1 July, 1 October

Annex A: Schedule A(2) - Reporting of performance data: HCFC 22 Plant

Data required to be recorded and reported by Condition 4.1.3. The data should be assessed at the frequency given and reported annually to the Agency.

Table SA(2.1): Annual Production/Treatment (HCFC 22 Plant)
None required

Table SA(2.2): Performance parameters (HCFC 22 Plant)		
Parameter	**Frequency of assessment**	**Performance indicator**
Number of hours emission points HCFC22-01 and HCFC22-03 vent to air as the result of VTP and Vent Capture System being unavailable to the HCFC 22 Plant	Quarterly	Hours
Estimated emissions of halogenated hydrocarbons at times the VTP and Vent Capture System are not available to the HCFC 22 Plant	Quarterly	Tonnes