

This form will report compliance with your permit as determined by an NRW officer

Site	Barry Silicone Plant	Permit Ref	BR9685IX		
Operator/Permit holder	Dow Silicones UK Limited				
Regime	Installations				
Date of assessment	06/11/2018	Time in	10:00	Out	17:00
Assessment type	Audit				
Parts of the permit assessed	Monitoring, emissions, abatement				
Lead officer's name	Leakey, Antony				
Accompanied by					
Recipient's name/position	Judith Sartor/ Environmental Specialist	Date issued	14/01/2019		

## Section 1 – Compliance Assessment Summary

This is based on the requirements of the permit under the Environmental Permitting Regulations or the licence under the Water Resources Act 1991 as amended by the Water Act 2003. A detailed explanation is captured in "Compliance Assessment Report Detail" (Section 2) and any actions you may need to take are given in the "Action(s)" (section 4). This summary details where we believe any non-compliance with the permit has occurred, the relevant condition and how the non-compliance has been categorised using our Compliance Classification Scheme (CCS). CCS Scores can be consolidated or suspended where appropriate, to reflect the impact of some non-compliances more accurately. For more details of our CCS scheme, contact your local office.

Permit conditions and compliance summary	CCS Category	Condition(s) breached
C2 - General Management - Management system and operating procedures	C3	1.1.1
E1 - Emissions - Air	C3	3.1.2

**KEY:** See Section 5 for breach categories, suspended scores will be indicated as such.  
**A** = Assessed or assessed in part (no evidence of non-compliance), **X** = Action only,  
**O** = Ongoing non-compliance, not scored.

<b>Number of breaches recorded</b>	2	<b>Total compliance score</b> (see section 5 for scoring scheme)	8
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If the Number of breaches recorded is greater than zero, please see Section 3 for our proposed enforcement response

## Section 2 – Compliance Assessment Report Detail

This section contains a report of our findings and will usually include information on:

- The part(s) of the permit that were assessed (eg. Maintenance, training, combustion plant, etc)
- Where the type of assessment was 'Data Review' details of the report/results triggering the assessment
- Any non-compliances identified
- Any non-compliances with directly applicable legislation
- Details of any multiple non-compliances
- Information on the compliance score accrued inc.
- Details of advice given
- Any other areas of concern
- Any actions requested
- Any examples of good practice
- A reference to photos taken

### **Dow Silicones UK Ltd OMA on 6/11/18 and Site Visit Report - 18/10/18**

#### Operator Monitoring Assessment

The OMA focused on the monitoring of emissions to water from the main process discharge point W1.

Dow Silicones have shown that quality control for periodic and continuous monitoring are well managed, providing reliable monitoring data. Competency of document management, records, staff, calibration and maintenance were all high. This has resulted in a good overall score of 82%, which is slightly lower than the 85% achieved on the previous OMA at the Barry site, reflecting the tightening of standards.

A critical element relating to composite sample integrity and preservation was found to be inadequately managed. The composite sampler temperature control was found to be defective and there are no checks in place to ensure that temperature control failure is detected. This is considered to be a category 3 breach of permit management condition 1.1.1. The category is justified as the determinand most likely to be affected by the temperature control failure is suspended solids measurement and results historically are generally well within the ELV, so any under-reporting is unlikely to influence compliance.

#### **ACTION: Dow Silicones to provide details of actions taken at next site meeting.**

Several observations are also noted in the full OMA report, which Dow Silicones should consider when reviewing monitoring procedures in the future.

#### W941 Reboiler Failure

The latest in-situ tube wall thickness checks showed wall loss of 15% in 9 months of service. This is higher than might have been anticipated, but potentially still within the expected lifetime range. The next checks are scheduled for May 2019.

An update has been provided to HSE and this issue will be included in the updated COMAH intervention plan and no further action is currently necessary under the EPR regime.

#### Pressure relief impact assessment

Plans are still under development for roll out of a screening tool at Barry and is likely to be several years away. Dow suggested trial screening of vents with potential issues ahead of the company-wide programme.

#### **ACTION: Dow Silicones to provide an update at next site meeting.**

#### LDAR

The Dow LDAR corporate standard is not being applied in Europe. The focus is on large hydrocarbon inventories. This aspect will be reviewed periodically to ensure that relevant best

practice is being applied.

#### W922 MeH cyclics process scrubber HCl release

Three other processes with associated vent fridge units have been identified for improved interlocks or procedural controls. The acetoxy process is to be investigated further.

**ACTION: Dow Silicones to provide an update at next site meeting.**

#### W1 waste water methanol excursion

Replacement of the BOD meter with TOC meters is proposed to prevent a recurrence. A second DO probe is also to be installed. The elevated release of methanol was not above the allowed COD release from W2, so potential environmental impact is expected to be negligible. However, resilience of the effluent treatment plant to extreme weather conditions is required to ensure that escalation under more severe conditions could not occur. A review of permit ELVs with respect to methanol and TOC/COD will also need to be undertaken.

**ACTION: Dow Silicones to provide an update at next site meeting.**

#### ERU dioxin emissions

Monthly monitoring of dioxin/furan emissions has been implemented and results returned to compliance before the unit was shut down for cleaning.

The extent of fouling was such that residence time reduction may have taken place, but this does not seem to be the main cause of the high emissions.

The decay of emissions prior to clean out may suggest that the elevated levels were associated with the high feed rate of methyl chloride in October 2017. A high level of chlorinated material under conditions of reduced residence time may have resulted in elevated dioxin formation and adsorption onto cooler internal plant surfaces downstream of the ERU. After the event in 2017 "memory effect" releases from dioxin contaminated deposits and plastic components may have resulted in the elevated emissions, which decayed over time as dioxins were purged from the system.

The dioxin analysis of the removed scrubber packing (approx. 8 ng/kg) suggests that levels were not significantly elevated compared to typical background values in soils and other materials. This may indicate that "memory effect" releases from the packing was not a cause of the elevated emissions. Other deposits in the flue gas train may have resulted in "memory effect" releases.

Initial assessment of the worst-case estimated mass releases resulting from a "memory effect" event in October 2017 does not suggest that significant pollution will have occurred. There may be other causes of elevated emissions associated with changes to the ERU feed gas composition (longer chain hydrocarbons and silanes) and temperature profile changes due to cleaner water-side heat transfer surfaces (new boiler). There may also be a need to consider short-term control of residence time due to increased silica fouling rates. Dow Silicones will investigate these aspects and provide updates.

Based upon the current situation that emissions have returned to normal and measures are in hand to increase control and monitoring of dioxin emissions the incident is classified as a category 3 breach of permit condition 3.1.2. Progress reviews will be held until all further actions have been investigated and implemented where appropriate. A schedule 5 Part B notification will be required when final actions are known.

**ACTION: Dow Silicones to provide an update at next site meeting.**

#### WGC Bref

The draft information questionnaire was reviewed to ensure that all relevant vents and substances

were captured where possible. In particular, it is considered important to capture routine emissions of siloxanes.

Subsequent review of the questionnaire by the shadow technical working group has resulted in some data being removed to avoid inconsistencies (e.g. mass flow rates instead of concentration data).

Monitoring returns and notification review

Monitoring data for Q2 and Q3 2018 has been reviewed and no breach of permit conditions was identified.

END

## EPR Compliance Assessment Report

**Report ID:  
CAR\_NRW0034457**

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Operator/Permit holder	Dow Silicones UK Limited	Date	06/11/2018

### Section 3 – Enforcement Response

You must take immediate action to rectify any non-compliance and prevent repetition. Non-compliance with your permit conditions constitutes an offence and can result in criminal prosecutions and/or suspension or revocation of a permit. Please read the detailed assessment in Section 2 and the steps you need to take in Section 4 below.

In respect of the above non-compliance you have been issued with a warning. At present we do not intend to take further enforcement action. This does not preclude us from taking additional enforcement action if further relevant information comes to light or offences continue.

### Section 4 – Action(s)

This section summarises the actions identified during the assessment along with the timescales for when they will need to be completed.

Criteria Ref.	CCS Category	Action required/advised	Due Date
See Section 1 above			
C2	C3	Review composite sampler management and maintenance procedures.	31/03/2019
E1	C3	Dow Silicones to review the range of potential causes of the elevated emissions and provide updates on progress to control or eliminate credible causes.	30/06/2019

## Section 5 – Compliance notes for the Operator

To ensure you correct actual or potential non-compliance we may

- Advise on corrective actions verbally or in writing
- Require you to take specific actions verbally or in writing
- Issue a notice
- Require you to review your procedures or management system
- Change some of the conditions of your permit
- Decide to undertake a full review of your permit

Any breach of a permit condition is an offence and we may take legal action against you

- We will normally provide advice and guidance to assist you to come back into compliance either after an offence is committed or where we consider that an offence is likely to be committed. This is without prejudice to any other enforcement response that we consider may be required.
- Enforcement action can include the issue of a formal caution, prosecution, the service of a notice and/or suspension or revocation of the permit.

**See our Enforcement and Civil Sanctions guidance for further information**

This report does not relieve the site operator of the responsibility to

- Ensure you comply with the conditions of the permit at all times and prevent pollution of the environment
- Ensure you comply with other legislative provisions which may apply

### Non-compliance scores and categories

CCS category	Description	Score
C1	A non-compliance that could have a major environmental effect	60
C2	A non-compliance which could have a significant environmental effect	31
C3	A non-compliance which could have a minor environmental effect	4
C4	A non-compliance which has no potential environmental effect	0.1

**Operational Risk Appraisal (Opra)** - Compliance assessment findings may affect your Opra score and/or your charges. This score influences the resource we use to assess permit compliance.

## Section 6 – General information

### Data protection notice

The information on this form will be processed by the Natural Resources Wales (NRW) to fulfil its regulatory and monitoring functions and to maintain the relevant public register(s). The NRW may also use and/or disclose it in connection with:

- Offering/providing you with its literature/services relating to environmental matters
- Consulting with the public, public bodies and other organisations (eg. Health and Safety Executive, local authorities) on environmental issues
- Carrying out statistical analysis, research and development on environmental issues
- Providing public register information to enquirers
- Investigating possible breaches of environmental law
- Assessing customer service satisfaction and improving its service
- Freedom of Information Act/Environmental Regulations request

The NRW may pass it on to its agents/representatives to do these things on its behalf. You should ensure that any persons named on this form are informed of the contents of this data protection notice.

### Disclosure of information

The NRW will provide a copy of this report to the public register(s). However, if you consider that any information contained in this report should not be released to the public register(s) on the grounds of commercial confidentiality, you must write to your local area office within fifteen working days of receipt of this form indicating which information it concerns and why it should not be released, giving your reasons in full.

### Customer charter

#### What can I do if I disagree with this compliance assessment report?

If you are unable to resolve the issue with your site officer, you should firstly discuss the matter with officer's line managers using the informal appeals procedure. If you wish to raise your dispute further through our official Complaints and Commendations procedure, phone our general enquiry number 0300 065 3000 (Mon to Fri 08.00 – 18.00) and ask for the Customer Contact team or send an email to enquiries@naturalresourceswales.gov.uk. If you are still dissatisfied you can make a complaint to the Public Services Ombudsman for Wales. For advice on how to complain to the Ombudsman phone their helpline on 0845 607 0987.

#### Welsh Language

If you would like this form in Welsh please contact your Regulatory Officer.