

	EPR Compliance Assessment Report	Report ID: BU2110ISSI/20151005			
This form will report compliance with your permit as determined by an NRW officer					
Site	Cabot Carbon, Barry		Permit Ref	BU2110IS	
Operator/ Permit holder	Cabot				
Date	5 th October 2015		Time in	10:00	Out 15:30
What parts of the permit were assessed	Inspection of caustic leak area and associated pipes and pumps; review of fugitive emissions procedure; H2 plant and Cooling Water Concentration Factor update				
Assessment	Inspection	EPR Activity:	Installation: x	Waste Op:	Water Discharge:
Recipient's name/position	Paula Lloyd, Plant Environmental Manager				
Officer's name	Andi Kemp		Date issued	15 th Mar 2016	

Section 1 - Compliance Assessment Summary					
This is based on the requirements of the permit under the Environmental Permitting Regulations. A detailed explanation and any action you may need to take are given in the "Detailed Assessment of Compliance" (section 3). 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					Condition(s) breached
a) Permitted activities	1. Specified by permit	A			
b) Infrastructure	1. Engineering for prevention & control of pollution	A			
	2. Closure & decommissioning	N			
	3. Site drainage engineering (clean & foul)	A			
	4. Containment of stored materials	A			
	5. Plant and equipment	N			
c) General management	1. Staff competency/ training	A			
	2. Management system & operating procedures	A			
	3. Materials acceptance	N			
	4. Storage handling, labelling, segregation	A			
d) Incident management	1. Site security	N			
	2. Accident, emergency & incident planning	N			
e) Emissions	1. Air	N			
	2. Land & Groundwater	N			
	3. Surface water	N			
	4. Sewer	N			
	5. Waste	N			
f) Amenity	1. Odour	A			
	2. Noise	A			
	3. Dust/fibres/particulates	A			
	4. Pests, birds & scavengers	A			
	5. Deposits on road	A			
g) Monitoring and records, maintenance and reporting	1. Monitoring of emissions & environment	N			
	2. Records of activity, site diary, journal & events	N			
	3. Maintenance records	N			
	4. Reporting & notification	A			
h) Resource efficiency	1. Efficient use of raw materials	N			
	2. Energy	N			
KEY: C1, C2, C3, C4 = CCS breach category (* suspended scores are marked with an asterisk), A = Assessed or assessed in part (no evidence of non-compliance), N = Not assessed, NA = Not Applicable					

Number of breaches recorded	0	Total compliance score (see section 5 for scoring scheme)	0
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If the Total No Breaches is greater than zero, then please see Section 3 for details of 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 (e.g. 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 suspended or consolidated scores.
- details of advice given
- any other areas of concern
- all actions requested
- any examples of good practice.
- a reference to photos taken

Compliance Assessment: Cabot Carbon, Barry (BU2110IS)

Purpose of Compliance Assessment

This compliance assessment report (CAR1) covers a routine planned inspection of the Cabot Carbon, Barry installation on 5th October 2015.

The scope of the inspection, preceded by a series of Cabot presentations and questions asked by the regulator, extended to the following areas:

- The caustic soda leak (2014) – from incorrect siting of orifice plate in relation to an elbow joint
- Update on H₂, methane steam reforming plant and recent assessment of condition and operating efficiency
- Mechanically sealed pump replacement programme, including associated improvements on HCl micro relief holes and gasket changes
- Further water usage reductions by increasing cooling water system CF
- Completed IP24 and reporting of Cl₂ @ A1
- Improvements to tanker movements and loading
- Notifications – current perspective and interpretation and reference to 2009 bellows incident, Spillage & Release Index, unable to sample notifications
- Fugitive emissions recommendations and previous benchmarking work by Cabot – are all potential releases captured and do any need quantification by measurement or calculation

The brief physical inspection focused on the caustic soda tank incident in the acid plant, associated bunds, sewer and drain lines, pipework and pumps; the treated silica post variation upgrades; tanker off loading area.

Caustic Soda Leak

This leak was communicated by the operator in their 2014 fugitive emissions review submission and initial comments were made by AK (NRW) in CAR1 20150624, indicating AK wanted to discuss this during a site inspection. This October 2015 visit included a presentation off the operator, questioning by the regulator and an onsite inspection of the caustic tank area. The operator did not notify the regulator using the Schedule 1 notice (see permit conditions 5.1.1 and 5.1.2), they use a Spillage & Release Index (SRI), which is believed to be based on some industry template / guidance and had ranked this incident as not reportable – see the section on notifications and guidance supplied by AK.

A copy of Cabot's presentation was supplied by the operator and is on NRW files. Briefly a leak was noticed around 08:30 on 31st July 2014, on the 2" recirculation line of the caustic soda (NaOH) tank – D-13. The recirculation pumps were shut down, but not before 455kg (estimated) of 47% caustic soda solution was spilled into the tank bund. Cabot state that a poorly sited orifice plate too close to an elbow joint (<150mm), causing jet impingement to the internal surface of the elbow, thus resulting in two pin holes, led to the leak.

The operator has subsequently re-sited the orifice plate downstream of the elbow on a stretch of vertical pipe and replaced the damaged elbow joint. The carbon steel used in this pipe work is suitable for the duty concerned, in terms of material conveyed, temperature and pressure of the system. The bund was in a good condition and had adequate capacity for this spill.

The operators presentation included useful photographs, schematics, P&ID and a screen shot of the process parameters (in this case tank level) and calculations on estimated loss. From this information it can be seen that the loss in tank level started around 16:52 on 30th July 2014 and the leak noticed by an operative out on plant at 08:30 on 31st July 2014. The pumps feeding the tank concerned (D-13) were stopped at 05:51 on 30th July (presumably as part of the routine process operations) and as can be seen from the screen shot the red trace (which is believed to be tank level) stays horizontal until 16:52 that day, when the level starts a gradual decrease, until 08:45 on 31st July when the recirculation pumps are stopped. After this point the tank level returns to the horizontal. The calculations based on volume of tank, tank level readings, relative density (plant used s.p. term) and molar concentration of the caustic soda solution (47%) have led to a probable case estimate of 455kg lost.

The additional questions asked by the regulator concerned the duration of the leak before detection, why the orifice plate was sited so close to the elbow, why process control did not alarm as tank level dropped. The answers put forward by the operator are:

- The leaking elbow and orifice plate was covered by insulation
- The original design drawings showed that this was always arranged thus and as covered, was not noticed immediately as being in the wrong place
- The loss was only 1.10% of the level as indicated at 16:52 on the 30th, by the time the 08:45 reading was recorded on the 31st

Action 1 Cabot Carbon 09032016: *Confirm if there are level alarms on the tank concerned and if so what volume and / or rate of loss triggers the alarm, i.e. sensitivity and tolerance. Due: 30th April 2016*

Actions the operator has (or will take based on 5th Oct 2015) taken in respect of this incident are:

- Orifice plate moved to industry engineering standard distance away and position in respect of elbow joint
- Elbow joint replaced
- Operator proposing to conduct a desk based study of their P&IDs to spot likely similar issues
- Annual review of P&IDs out on site physically against plant configuration and red lines put on drawings for future attention
- Maintenance engineers will check P&IDs during routine work to ensure they remain accurate

The Regulator is satisfied with the actions above, notwithstanding Action 1 Cabot above, there are more regulatory comments in the notifications section of this report.

Hydrogen Plant

Cabot operate a steam methane reforming plant (SMR) to produce hydrogen for their fumed silica process. A previous CAR1 form and comments from the NRW handover inspection led to the generation of the H2 plant as an agenda item in terms of the completion of the plant overhaul. It was understood that ABB were commissioned to assess the operating state of the plant; and the regulators view point was that this should be done taking on board (as far as possible) current BAT and future BAT standards in any available revised BRefs. SMR H2 plants are covered in s2.2.3 of the current Large Volume Inorganic (Ammonia, Acids and Fertiliser) BRef – August 2007. The likely date for the review of this BRef is not certain yet.

The emission point for the hydrogen plant is the 20m vent stack A2; and has these permit ELVs: oxides of nitrogen as NO₂ = 200mg/m³; CO = 200mg/m³. These are to be verified for compliance by an annual sample over a reference period of one hour as an hourly average. The monitoring methods are stipulated in the permit. The 2015 annual results show levels well below the permit ELV of these two parameters.

In terms of current BAT, these are some important points about the current SMR plant:

- The limits set are based on BAT BRef and Sector Guidance note emission benchmarks
- The data used for the SMR emissions in the application are considerable lower than these benchmarks
- The annual monitoring data typically shows values considerably lower than the ELVs
- The off gas from the SMR plant is used as additional fuel for the reforming plant
- Incoming natural gas from mains gas supply, is desulphurised by a zinc oxide catalyst (is this actually high temperature hydrogenation of alkyl sulphur compounds with plant generated H₂ using a metal catalyst to form H₂S, before the H₂S is adsorbed on to the ZnO bed forming ZnS?)
- High temperature shift conversion is used to increase yield of CO₂ and H₂
- Pressure swing adsorption (PSA) is used to separate the hydrogen
- Heat recovery from the hydrogen and off gases is used to preheat fuel and raise steam
- NO_x control not considered justified at this site based on the thermal rating of the plant

The hydrogen plant overhaul referred to in previous CAR1s emanated from CABOT reporting a failed PSA valve on the steam reforming plant, on their 2012 fugitive emissions review submission under EPR (release of H₂). An investigation took place with the supplier into the faulty solenoid; management of change revised maintenance changes of air filters; upgrade of control valves proposed; monthly preventative maintenance; and finally, complete a proposal for the H₂ plant overhaul to take the plant operation forward the next ten years.

Subsequent to and in line with the final action above, ABB were commissioned in Dec 2014 to complete a gap analysis on the H₂ plant on the basis of operational practices, process efficiency, equipment reliability and environmental compliance. CABOT presented the current (Oct 2015) situation during the 5th Oct site meeting and inspection.

ABB included in their report a general approval of continued plant operation going forward and made a number of prioritised recommendations. CABOT intend to scope out the financial basis for making longer term capital expenditure plans. In terms of compliance only three (two medium, one low priority) recommendations were made. There were however ten other high

priority recommendations (one process safety and nine equipment reliability).

The recommendations can be cross referenced to the current BRef covering SMR (LV I AAF) and include:

- Changing pressure switches for pressure transmitters – objective: to gain tighter control and feedback from process
- The above could be part of the overall PSA valve upgrades
- Ensure reformer catalyst tubes are operating within the design temperature range – objective: to maintain operational design life
- Replace fixed speed belt driven reformer draft fan with directly coupled variable speed fan – objective: reduce direct energy consumption and move away from single point failure drive belt situation
- Consider increasing inlet temperature to the zinc catalyst beds – objective: to prevent / minimise sulphur slip
- Process condensate could be run through the deaerator – objective: to recover water and reduce heat loading on cooling towers
- Review steam : carbon ratio with a view to ensuring it as low as this system allows, without compromising H₂ yield (BAT S:C is around 3, process dependant) – objective: to reduce overall energy input into plant

On this basis NRW considers that the SMR plant is adequately functioning and as long as the optimum position between hydrogen production and reducing energy consumption, recovering heat and using off gases as supplementary fuel is maintained, we are satisfied that the SMR plant currently represents BAT. How long this position remains is based, amongst other things, on continued good plant maintenance, new and improving technological changes, BAT BRef reviews, operator applying best practice in operating the process and continued low emissions (well within the ELVs and no worse than the current data).

Cabot are about to enter a new 10 year contract with Dow Corning (adjacent plant) so therefore some relative certainty is required about plant performance and reliability.

Critical Pipework and Pump Replacement Programme

Cabot have tried to demonstrate continued improvement in line with their EMS and this element of plant operations serves to illustrate that. A particular aspect involved the review of critical pipework in (this instance) the acid plant handling HCl. See presentation Cabot supplied on the day.

In summary Cabot are striving for zero leaks and this led Cabot to review the acid pipework on a number of points: reducing permeation through the PTPE lined pipes, increasing the thickness of pipe liner, improving the bellows lining materials, eliminating drilled vent holes, single piece ball and stem ball valves, change in gasket material. In addition to this Cabot are planning to provide joint integrity training to personnel.

ABB were also engaged to carry out a pipework criticality review – after nearly three years work, this finished in Sep 2015. ABB were to provide advice around content of written schemes of examination, planned preventative maintenance, capital expenditure strategy, with all this feeding into revised designs. The objective of all this was to provide an answer (or indication) to the question: where will the next pipe failure be, based on duty and conditions of duty

(temperature, pressure, age and condition, materials of construction). Even though pressure regulations stipulate elements of a WSE, not all of the plant kit is covered by these regulations (around 80%), so ABB conducted their criticality review across the whole piping system. To aid them, site P&IDs and line lists, and pipe reference numbers were obviously referred to and double checked out on site. The output should be a revised (where needed) plant integrity programme.

In the effort to pursue and achieve zero leaks, Cabot have discussed with their piping supplier and come up with a refined acid pipeline vent hole design, which (rather than simple drilled holes) comprises a metal boss welded onto the pipe over the location of the vent hole. This aids in preventing localised corrosion of the external surface of the steel pipework, which would lead to loss of HCl vapour above the accepted venting loss from HCl permeation through PTFE. The site has several HCl ambient monitors around the acid plant which alarm if HCl is detected at and above certain concentrations.

Action 2 Cabot Carbon 09032016: *Confirm what concentration the HCl monitors alarm at and / or what the operators in the control act upon if the monitors pick up HCl at levels likely to be caused by leaks as opposed to PTFE permeation vents; how do these trigger concentrations compare to ambient concentrations due to vent hole emissions.* **Due: 30th April 2016**

Cabot have also reviewed and moved over to an improved gasket material on acid duty (GORE), this is hoped to minimise micro leaks through flange seals. To fully implement what on the face of it is a simple change, the store rooms have been labelled, staff have been trained, the pipeline specifications and spare parts records have been altered to refer to the new gasket. The reasons for the change and examples of the new gaskets have been shown to personnel.

Cabot have also embarked and drawn up a schedule for acid pump replacement: moving over to magnetic drive pumps from the mechanically sealed pumps. It is widely recognised that magnetic drive pumps (being effectively seal less) are a good choice when trying to prevent leaks and fugitive emissions.

To complement this Cabot are increasing the spares stock for the Richter range and are looking to phase out all mechanically sealed pumps by completing phase 1 of this programme in FY 2015. Cabot also apply a rule of thumb that any repair that exceeds 65% of replacement cost, then that spend (instead of replacement) needs to be justified and agreed by senior management – this should avoid the potential leaks caused by ageing plant in need of replacement. Cabot employees have been on maintenance courses for the new pumps and spares, provided by the pump manufacturer.

All this work should provide sufficient evidence that certain potential sources of fugitive emissions are well controlled and not significant enough to warrant quantification. However the Sector Guidance Note for LVIC does recommend that sites should be aware that even though individual sources of fugitive emissions (flanged joints, bellow, seals, tank breather vents, pumps etc.) may well not be significant, it is the aggregated loss through many sources that may mean sites should assess the need to quantify once the emission has been qualified and provide good numerical evidence for screening out losses from annual quantification – see section on Fugitive Emissions further on.

Cooling Tower Concentration Factor

An ongoing regulatory topic is minimising water use and in this case by altering the cooling tower concentration factor. The CF is usually defined as the ratio of the concentrations of solutes in recirculating water to the concentration of solutes in the makeup water. Periodically water has to be blown down from heating / cooling systems as the concentration of dissolved solids (typically inorganic salts, biofouling etc.) builds up. Cabot have tried and / or working through ongoing measures for reducing water use (a review is due by the end of 2016) with measures such as

using blow down to seal the vacuum pumps.

Reducing the blow down increases the concentration factor as the dissolved solids start to build up. This potential water saving measure has to be balanced against competing processes, such as quality of blow down used to seal vacuum pumps and maintaining the correct chemical dosing as part of mandatory Legionella control.

The current CF is 1.86; the Cooling Water BRef quotes a variety of CF figures, but a lot is dependent on the heat load, size of the plant, mode of cooling etc. In an ideal world you could expect a higher CF than this 1.86, but Cabot have sought to explain the competing requirements that leave them with this figure. It is not the purpose of this CAR1 to conduct a BAT assessment on the cooling system and its effect on the environment - water use, heat load removal efficiency and other areas to reduce heat load on the system – we will look again at this when Cabot submit their waste minimisation and water efficiency reviews by the end of 2016.

Fugitive Emissions

A discussion took place about fugitive emissions management at Cabot, Barry. This partly followed on from the caustic soda leak reported in the 2014 fugitive emissions review (ref. CAR1 24th June 2015) covered above and leads into, to some extent, to notifications required under the environmental permit, see section on notifications further on. At this stage comments are confined to potential fugitive emissions to air.

Cabot aim for no non compliances, no public complaints, no harm to people. Text above about pump replacements and pipework reviews will contribute to lowering fugitive emissions. Cabot have adopted a zero release / spill philosophy, hence the work to reduce HCl emissions. The operator has recognised that the additional benefits of the zero spill / release target are: minimises the chance of harm by reducing contact between people and substances and plant performance is maintained at an optimum level. It was noted that this policy has been signed by the overall plant manager (dated 2013).

A presentation was given on the improvements made to the bulk tanker loading as many small spills of powdered product have occurred and been reported in fugitive emissions reviews. These were caused variously by tanker hatches not being closed tightly enough, pressure relief valve failure and issues with the rear loading valves with the soft seat, since Broekema replaced another haulier as the second of two hauliers used. Improvements Cabot have implemented include a gantry and harness system so tanker drivers can safely perform tasks (tightening hatches) on the roof of the tanker and spares to be provided by the haulier so repairs can be made to valves and associated pipework on the tankers. Tankers are rejected if preloading checks, that have recently been developed, are failed. The haulier responsible for the majority of these incidents has lost some of the business due to their poor performance.

The permit application describes some of the limited potential sources of fugitive emissions to air: silica (particulate form), HCl, chlorosilanes, natural gas, hydrogen. Prevention / minimisation of these is by preventative maintenance and improvements to pipework, vents, pumps and bellows associated with the acid plant for example – see above. Storage silos vent to atmosphere via bag filters and fumed silica bagging operations are conducted in partly enclosed areas. Apart from an Improvement Programme item (IP3) for re-routing the bagging machines LEV vents via designated emission points through bag filters, there have been no other IPs relating to the identification and control of fugitive emissions. The permit decision document concluded that management of fugitive emissions to air would be adequately controlled with the permit conditions. This condition is 2.2.4.1 and requires the operator to use BAT to prevent and / or reduce fugitive emissions – and techniques no less rigorous than those indicated in the permit application.

An action on AK from the Oct 2015 inspection was to check if there were any previous Cabot

quantification figures associated with their fugitive emissions. There are no such figures in the application and permit files and NRW will not necessarily require quantification. Reference should be made to **Recommendation 1 from CAR1 24th June 2015**. This suggested that the operator should go back through their substance inventory (raw materials used, products made, waste, ancillary materials, such as fuel or cleaners etc.) that are held in relevant volumes and tabulate these. The relevant volumes for most substances (unless particularly toxic) should be 100lt (25 gal) or above as a rule of thumb – as this is usually the minimum sized container that is used to hold solvents, oils, detergents etc. on an industrial scale and storage is usually of several or many of these containers. The site should then look at how these substances are used on site (to clean vehicles, part of reactor recipe, coolant etc.) and assess how, by what route and how much could potentially be lost. Don't screen a substance out of assessment based simply on the fact that spilt contents would be caught in a bund and / or chemical sewer.

By adding in the control measures (e.g. small containers, banded primary tank, low volatility, vapour return lines, conservation vents, controlling temperature of stored substances etc.) the operator should come up with some statements on potential fugitive losses for each substance against the use they are put to / process they are involved in. If everything comes out as low risk, then there is likely to be no need to further quantify fugitive losses. If, however, a substance, its quantity, properties, how stored and used, comes out as higher risk, Cabot may have to provide a basis for estimating fugitive losses. Risk assessing the potential substance losses is a matter of judgement, influenced by the process, uses and nature and quantity of substances, how they are stored, how often operations (such as tank filling, emptying etc.) take place. Reference can be made to SGNs and BRef (especially Emissions from Storage and the LVOC for VOCs).

Once this exercise is done, all substances and their potential as quantifiable fugitive losses to air will be known. Going forward Cabot can include in the annual fugitive emissions review, not just spills etc., but statements (based on above assessment work) on whether all sources of fugitive emissions are as previously described and / or specific detail about losses of certain substances, e.g. HCl from PTFE lined pipes, flanges, pumps etc. Reasons for not quantifying potential and actual fugitive releases to air must be defensible and based on the assessment work above / Recommendation 1 June 2015.

Notifications

Notifications as per the relevant permit conditions was also discussed on 5th Oct 2015 and an action for AK was to provide more advice about certain wording in the permit conditions 5.1.1.1 – 5.1.1.4:

- *Emission of any substance which exceeds any permit limit;*
- *The detection of any fugitive emission which has caused, is causing or may cause **significant pollution**;*
- *Malfunction, breakdown or failure.....that has the potential to cause **significant pollution**;*
- *Any accident which has, may or has the potential to cause **significant pollution***

NRW are aiming to produce a briefing note covering what we expect operators to report and when, until that is issued, please see advice off AK as a general guide. You will note that the ethos is to report and that Scheduled Notifications do not necessarily constitute a breach and companywide management KPIs should not use the mere submission of a scheduled notice as a plant failure.

This clarification sought by the operator stems back to a bellows incident in 2009, where initially the regulator raised two non compliances: one for failure to notify and one root cause failure to maintain. The second breach was subsequently removed.

This is the general advice from AK as a Regulatory Officer of NRW based on my experience. See comments above re. NRW briefing note. Every situation is different, so it is difficult to be absolute.

Guidance on Implied Condition and Notifications

Regulation 46(1) & (7) of EPR Amendment Regulations 2013 (SI 390) amended Schedule 5 of EPR 2010 by inserting paragraph 20 after paragraph 19 in Part 1 of Schedule 5. Regulation 13(3) of 2010 EPR makes Part 1 of Schedule 5 apply in law.

Paragraph 20 inserts this as an implied condition to all permits:

“Incidents and accidents: deemed condition of a permit

20. *Every environmental permit in relation to a regulated facility to which Schedule 7A, 13A or 14 applies is deemed to contain the following conditions, unless such conditions are included in the permit—*

(a) in the event that the operation of a regulated facility gives rise to an incident or accident which significantly affects the environment, the operator of that regulated facility must immediately—

(i) inform the regulator,

(ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and

(iii) take the measures necessary to prevent further possible incidents or accidents;

(b) in the event of a breach of any permit condition, the operator of a regulated facility must immediately—

(i) inform the regulator, and

(ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;

(c) in the event of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator of a regulated facility must immediately suspend the operation of the regulated facility or the relevant part of it until compliance with the permit conditions has been restored.”

The above fills in any gaps and embellishes conditions for notifications in the original permit. All breaches must be reported in addition to any incident / accident that significantly affects the environment and any breach that threatens to cause immediate significant adverse effect on the environment. In addition there is section 5 of your permit re. Notifications, in particular conditions 5.1.1.1, 5.1.1.2, 5.1.1.3, 5.1.1.4. These conditions include reporting of breaches and / or accidents / incidents that are not only causing pollution, but have the potential to cause significant pollution.

My view is that all incidents, accidents and breaches and results above limit (but analytical uncertainty or some other factor, e.g. resampling results bring the result below limit) should at least be discussed with the regulator and then a decision is made to notify formally using the Schedule 1 notification form or not – in these cases it is almost certain you would have to notify using Part A of the Schedule 1 notice. The key is that the operator will probably be able to make that decision and it will be more or less obvious to notify or not – but if in doubt speak to the regulatory officer. The thing to bear in mind and there is an element of subjectivity to this, is that there must be actual or potential significant pollution, or could significantly affect the environment, or significant adverse effect to the environment and / or human health (using wording from section 5 of your permit and para 20 of Part 1 of Schedule 5 EPR). I would say any release or incident that could have led to a release, where the operator can justify that measures employed at the site worked as intended, could be argued, in some cases, does not have the potential to have a significant adverse effect or cause significant pollution to the environment. However this depends on several factors:

- Release from non permitted point or release of non permitted substance from a point source, i.e. simple permit breach.
- Type of substance (toxic, flammable, incompatibility, soluble, dense gases, persistent, environmental fate etc.).
- Amount of substance – is the quantity so trivial it could not cause significant pollution or harm to human health – for non point source (fugitive) emissions.
- Amount of substance – in excess of permit limit at permitted release points, i.e. simple permit breach.
- Did any safety or containment or abatement / suppression measures deploy and work effectively (pressure relief vents, bunds, transport via chemical sewer).

Yes to points 1 and 4 of the above definitely constitutes filling in Part A of the Schedule 1 notice and immediately these will be permit breaches. Answers to the other points will influence the significance or potential significance and aid the regulator in deciding if there has been a permit breach. Take on board the points below when submitting the follow up / RCI in Part B and it is after this submission that the regulator will make a decision on whether there is a permit breach or not (except if yes to points 1 and 4 above):

- Is there a reason (for example from a Root Cause Investigation) that means the underlying cause in a different setting or at a different time or with a different substance and amount, could have led to significant adverse effects or pollution.
- The above point must be rooted in trust between the operator and regulator, because some things proposed by the operator may have to be taken at face value by the regulator.
- A secondary containment system working as designed could well negate any effect or potential effect on the environment – but should not be solely relied upon when improvements to maintenance, surveillance and response could be carried out, i.e. it is not sufficient to say “the leak was captured in the bund”, if RCI reveals poor maintenance practices – see below.
- If RCI revealed poor maintenance, overdue maintenance, incorrect service duty (substance incompatibility), use outside design parameters, staff competency issues etc., then it would not be appropriate to not report, as other permit conditions could potentially have been breached, i.e. management, training, maintenance, operating techniques, BAT etc.
- An act of 3rd party vandalism or some other act of God event that caused a release or breach of containment, that was or was not subsequently held in secondary and tertiary containment or abated, would require notification and you likely could fill in parts A and B together and submit – the regulator is unlikely to view this type of incident as a unauthorised release permit breach – but whether some other condition is breached depends on the operators response to mitigate or prevent pollution, i.e. accident management and associated management conditions.
- The act of God may well be regarded as a non breach, but poor response by the operator, not in accordance with the permit and specified operating techniques and good practice, could lead to breaches of other permit conditions.

In terms of the system Cabot use to evaluate incidents and whether they are reported to NRW in accordance with permit conditions 5.1.1.1 – 5.1.1.4 and paragraph 20 of Part 1 of Schedule 5 to the EPR, the previously referred to *Spillage & Release Index*, to reiterate the above guidance, report incidents (unless so trivial the amount released could not possibly have caused significant pollution) as a default position. The SRI is useful in categorising how potentially significant something already reported could have been. The criteria in Cabot’s SRI could be adapted to illustrate where a trivial incident as mentioned above could lie in the overall scheme, but the SRI should not be used as the default procedure to define when to report or not.

IP24 and Cl2 Limit At Emission Point A1

The ELV for Cl2 at A1 has been temporarily agreed (as per CAR1 June 2015 closing out IP24) as 10mg/m³ based on a quarterly result from 5 consecutive 30 minute samples and averaged. Repeat to get four quarterly averages and then average those four to get an annual compliance sample. The quarters over which this exercise should take place are Jul – Sep 2015, Oct – Dec 2015, Jan – Mar 2016 and Apr – Jun 2016. Dependant on each individual sample result, each quarterly average and the annual average, the process conditions over the year, presence of outliers etc. NRW will re-evaluate what the permit limit should actually be going forward. We may agree to stay with the BAT figure of 10mg/m³ until the permit is varied, when the basis of this ELV and sampling regime will need to be varied formally into the permit when the relevant BRef BATc are published.

Results so far indicate Cabot are able to comply with 10mg/m³ permit limit.

Site Inspection and Ad Hoc Items

AK visited the site of the caustic soda leak and generally inspected briefly some of the acid pumps, bunds, pipework and GRP infrastructure. As would be expected for a site this age, everything appeared in reasonable condition and able to perform its duty. Maintenance staff discussed with the regulator the merits or otherwise of GRP infrastructure in terms of substance compatibility verses structural integrity and the length of time GRP takes to cure before coming into duty. Some of the HCl monitors and their positions were looked at – see action above.

As mentioned the tanker off loading area was inspected and the new gantry system seen. This should lead to fewer delays in tanker movements as repairs can now (of certain components) be carried out on site and preload checklists should focus the hauliers to avoid such delays and perform tasks properly. Any solid product lost during these movements (albeit now minimised) should not lead to any significant pollution.

On the back of the discussions about pump, gasket and new relief hole design, the maintenance spares store was visited, where AK saw evidence of the labelling and communications of the new gasket material. The new bossed vent hole design PTFE pipework was looked at too. All parts had accurate identification labels on them, corresponding to a parts record sheet on the computerised inventory.

AK had a question about the drainage system and plans. The roadways and drain areas were in good visual condition and colour coded. Paula Lloyd provided some more information on the drainage systems after the inspection. Accurate drainage plans are vital and should form part of any emergency response plan and be available to the regulator, fire service and local authority.

The site have four drainage systems:

- Foul sewer (toilets, kitchens etc.) to DCWW foul sewer
- Trade effluent for blow down to DCWW under consent via S1 (which ends up in the same overall system as above)
- Process effluent to (acid sumps etc.) to Dow Corning (in Dow's permit) via S2
- Uncontaminated surface water via W1, W2 and W3

The treated silica plant expansion was looked at and it was agreed that Cabot would inform NRW as the production increased in phases up to the revised permit limit of 3500MT pa. Currently reactor three is on line and plant capacity is between 2100 and 2200MT pa and when

reactors one and two come on line (timeline not definitively finalised, as of Oct 2015), the capacity can increase to 3500MT pa.

The site also mentioned that in addition to ISO 14001 (recertified in Jul 2014), Cabot are working towards 18001 Occupational Health & Safety standard.

Conclusion

There are no non compliances to report from this inspection. It is clear that Cabot strive for zero incidents and releases and the culture is open and transparent, with investment from all levels of staff into securing these goals. Cabot also adopt and could provide evidence of a continued improvement philosophy with senior management endorsement.

Cabot, on the evidence I have seen thus far, are committed to environmental compliance and are proactive in exploring plant improvements that show synergies between environmental responsibility, good economics and product quality.

Please respond to the two actions given by the due dates and take on board the recommendation from CAR1 June 2015

END

	EPR Compliance Assessment Report	Report ID:
This form will report non-compliance with your permit as determined by an NRW officer		
Site		Permit
Operator/ Permit		Date

Section 3- Enforcement Response	Only one of the boxes below should be ticked
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.	
Other than the provision of advice and guidance, at present we do not intend to take further enforcement action in respect of the non-compliance identified above. This does not preclude us from taking enforcement action if further relevant information comes to light or advice isn't followed.	
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.	
We will now consider what enforcement action is appropriate and notify you, referencing this form.	

Section 4- Action(s)			
Where a non - compliance has been detected and an enforcement response has been selected above, this section summarises the steps you need to take to return to compliance and also provides timescales for this to be done.			
Criteria Ref.	CCS Category	Action Required/Advised	Due Date
See Section 1 above			

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 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 which 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 Natural Resources Wales (NRW) to fulfill its regulatory and monitoring functions and to maintain the relevant public register(s). 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 (e.g. 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 and taking any resulting action
- preventing breaches of environmental law
- assessing customer service satisfaction and improving its service
- Freedom of Information Act/Environmental Information Regulations request.

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

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 twenty 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 the officer's line managers. 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) 601 0987**.