



**CABOT CARBON LTD
SULLY MOORS RD
SULLY
VALE OF GLAMORGAN
CF64 5RP**

**ENVIRONMENTAL PERMIT BU2110IS
FUGITIVE EMISSIONS
ANNUAL REPORT CY2016**

12.04. 17

.....

Paula Lloyd

Plant Environmental Manager

Cabot Corporation

T +44 1446 709606

M +44 7764 627511

Introduction

Cabot Carbon Ltd is required to undertake an annual review of fugitive emissions at the installation in accordance with their Environmental Permit BU2110IS, requirement 4.1.4, which specifies:

"The Operator shall review fugitive emissions, having regard to the application of Best Available Techniques, on an annual basis, or such other period as shall be agreed with the Agency, and a summary report of this review shall be sent to the Agency detailing such releases and the measures taken to reduce them within 3 months of the end of such period."

The CY2016 fugitive emissions report addresses fugitive emissions from the permitted installation to air, water and land, having regard to best available technique (BAT) and the measures taken by Cabot Carbon Ltd to reduce them. The Annual Fugitive Emissions data table is also attached for reference.

Highlights:

We are pleased to report no fugitive emissions of a significant/reportable nature in 2016. There were 41 releases across 8 categories totaling only 359kg, 39% of which were below 1kg/1litre loss. There were no significant losses >200kg and only 1 event from 41 where loss of containment quantity was estimated to be no more 160 kg. This event occurred in September 2016 on the treated plant where a leak from a pressure relief valve resulted in fumed silica spill ground with no environmental impact.

The failure mode was identified as a worn belt drive and the hammer mill motor did not cut out. A quantity of conveyed silica backed up and was released via the PRV. Corrective and preventative actions have included the installation of system to detect premature belt failure with the addition of process trips on low power draw from hammer-mill downstream of PRV and high pressure on discharge pump upstream of PRV. There have been no reported releases since the improvements were implemented.

There have been small spills and whisp leaks from tanker hatches during loading under the WPS canopy (14kg from 10 events). Cabot request hatches are checked by contracted drivers before arriving at site and these are verified using a checksheet to loading. The more prevalent issues have historically been with Broekema Transport who we now longer contract to collect silica by tanker. Company XPO are now contracted and to date have demonstrated an improved standard of equipment.

The highest frequency of reported events across any single category was loss of HCL from 14 events totaling 118kg although 65% were leaks less than 5kg. Across all categories 10 events from 41 totaled less than 0.83kg overall loss (5 acid, 4 fumed silica and 1 oil (0.1kg)). Operators monitor the plant frequently, there is typically early detection and response to wisp and drip leaks in addition to a continually improving PM plan.

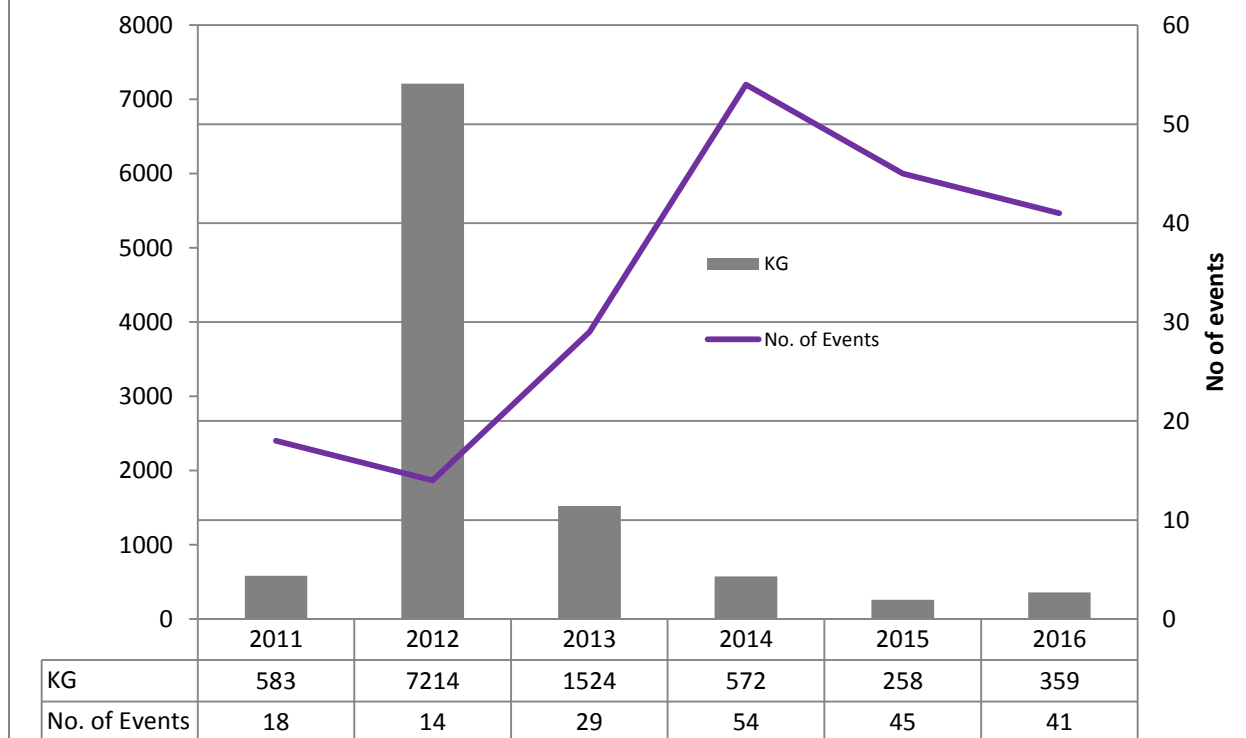
Fugitive Release Breakdown:

2016	Quantity KG	No. Releases/Spills	Form
Fumed Silica	184	13	Solid
HCL	118	14	Liquid
Hydrogen	30	2	Gas
Natural Gas	25	1	Gas
AHCL	15	6	Gas
Sodium Hydroxide	6	2	Liquid
Ammonia	11	2	Gas
Lab Solvent	0	0	Liquid
Water treatment Chemicals	0	0	Liquid
Synthetic/Mineral Oil	0.01	1	Liquid
Diesel	0	0	Liquid
PDMS oil	0	0	Liquid
Therminol Oil	0	0	Liquid
Total	389	41	

Quantities Released	Frequency 2015	Frequency 2016
~<10ml	14	5
~<100ml	15	2
~<200ml	2	3
~<500ml	2	
~<1L	3	6
~<5L	7	14
~<10L	0	7
~<30L	1	2
~<500L	1	2 *
>500kg<1000L	0	0
Total No. of Fugitive Events	45	41

- 50kg acid (re-boiler), 160kg Silica (Hammer Mill)

Cabot Barry Fugitive Release History



2016 Total	Kg	HCL Acid	Ammonia	Oil	ANHCL	Silica	NaOH	H2	Nat Gas
16*	<1	4	1	1	4	5	1		
14	<5	5			1	7	1		
7	<10	4	1		1			1	
2	<25							1	1
1	<50	1							
1	>51	0				1			

- Wisp leaks/drips

The list outlined below will hopefully provide an insight into the continual improvement and corrective actions in the year 2016 and also as part of ongoing programmes at Cabot Barry to aid environmental performance in support of our 'Drive to Zero' philosophy.

Examples of RCA and CAs for the larger volume releases in 2016:

- Installation of premature belt failure detection system with the addition of process trips (Fumed silica 160kg).
- E-50 reboiler has a full investigation and action plan against the failure (single 50kg acid release to containment bund and drained to acid pit)

Type	Quantity	Root Cause	Corrective Actions
Hydrogen	<20kg	Aging plant - bellows seal failed on valve stems	1. Valves replaced in SD16 2. Leak-check PM ongoing
Natural Gas	<25kg	Failed weld on a pressure gauge isolation valve below the insulation	1. Failed weld at local pressure gauge repaired & all other welds in area inspected 2. Written Scheme for inspection of reformer pipework amended to include NDT of these welds in the future

- All safety critical PMs are now being reviewed by E&T team
- New Quarterly PMs initiated to check PRVs using ultrasonic method to detect if the PRVs are passing
- Strategic pipeline replacement programme is being reviewed to reduce/prevent failures in service. We are replacing a full run of the 46% HCL pipework
- P-25 and P-18B pump: on a capital request for upgrades
- Roots Blower Seals: improvements planned to seal design
- H2 Plant: On LRP to replace aging valves with modern replacements

Summary

Environmental performance is a critical component of operational excellence and is carefully monitored at our site and we continue to be committed to conducting our business in an environmentally responsible manner. There have been no other notable reported fugitive releases during the reporting period that warrant further comment.

End.

*** Cabot Barry: 6 years 4 months since last ENC (@ 12th April 2017) ***