Annual Performance and Monitoring review EPR Permit BR9685IX, Dow Corning Ltd

This report is to fulfil ERP permit BR9685IX condition 4.2.2

4.2.2 - For the following activities referenced in schedule 1, table S1.1 (A1 to A18) A report or reports on the performance of the activities over the previous year shall be submitted to Natural Resources Wales by 31 January (or other date agreed in writing by Natural Resources Wales) each year. The report(s) shall include as a minimum:
(a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data

Contents

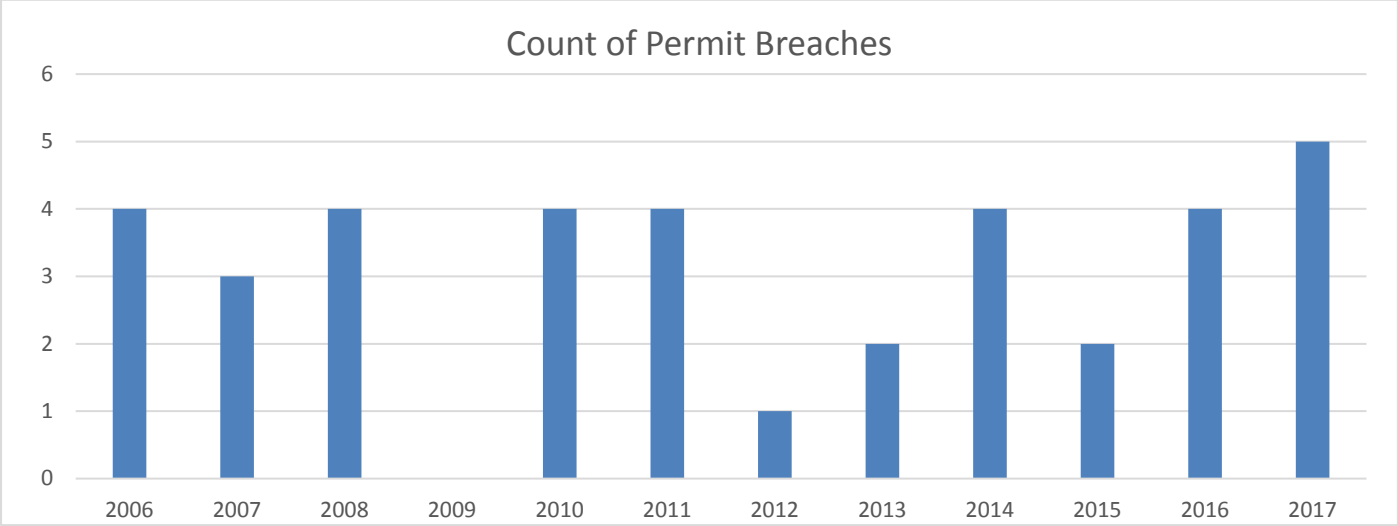
Summary

The report includes details of our performance during 2017 . SPC charts have been used for all analytical monitoring we carry out for releases to air and water.

Points of interest for 2017 :

- Haz DPR stockpile eliminated in preparation for capping of the old site landfill area.
- Significant noise monitoring carried out during the year, which showed that baseline noise levels across the complex have not changed since 2002.
- Reduction in incineration due on of the outlets struggling to process our materials.
- Methyl chloride venting to atmosphere from A12 has increased. is a conscious decision to allow Dow Corning to increase the on line time of one of the Recovery processes, thus reducing the quantity of solid hazardous waste produced. This waste is shipped to Europe for recovery, so reducing at source has an environmental benefit. The vented quantity is still well within the annual permitted limit.
- There has been an increase in Rubber sent for Energy recovery as we are no longer able to send it to India for Recycling, due to Indian legislation change.
- Annual ERU sample failed Dioxins and furans, a full RCI was carried out and actions completed. Three further samples showed the actions had been successful and the vent was well below the permit limit.

Incidents



There were 5 permit breaches reported in 2017:

A41 (W949 ERU) – Dioxins and furans

Sample taken in March 2017 indicated that the Dioxins and furans were above the permit level. It was noted that the internal soot removal equipment failed on 23rd December 2016 and had not been put back on line due to unavailability of spares. The soot blower was run as soon as the failed sample result was received.
Butanes in feed stream were increased due to recent configuration change, which may have increased the potential for carbon build up with the soot blower off line (carbon can act as a catalyst to create dioxins)
The unit was shutdown for a full clean in May. The ERU burner was found to be fouled, but this did not reduce residence time below required value.
Having operated the soot blower, the fire tube was found to be relatively clean.
Two sets of testing carried out after operation of the soot blower and before the cleanout show that the operation of the soot blower is key to minimise the dioxins emitted from the unit. The criticality of this item had not previously been recognized. A spare has now been purchased.
One further sample has been taken and analysed since the clean – which also shows very low levels of dioxins.

W1 – Low pH final effluent to river

On 23rd August dropping pH levels were identified. The additive dosing system to increase the pH was brought back online, having been offline due to blockages. In addition to this the pH probes were recalibrated. The renewed additive addition had the desired effect and the pH recovered.
Over the next few days the Secondary Waste Water Treatment (SWWT) was controlled using the pH measurements within the SWWT process. A couple of instances during this period the pH of the final effluent to river dipped down again to around pH 6.
Investigation was carried out and it was established that the recalibration of the SWWT probes on 23rd August had been incorrect. All Primary Waste Water Treatment (PWWT) and SWWT pH probes were recalibrated by the Dow Corning analyser technicians and the pH of the process was brought back under control.

W952 Chem sewer manhole failure

Sinkholes were found localised to a manhole on the inflow sewer to W952 chemical effluent sump. Periodic higher levels of effluent had dissolved plugs in two high level disused outlets of the manhole. Once these plugs were no longer in place, at times when the levels were high acidic effluent flowed out of the lined manhole and dissolved the limestone chippings surrounding the manhole. Over a prolonged time this caused the sinkholes to appear. The cause of the higher levels of effluent were due to the calibration of the level instruments in the effluent pit not reading as expected. These level instruments have been recalibrated and all documentation updated to ensure future calibrations are correct. The two plugs have been replaced with acid resistant plugs.

A41 (W949 ERU) – HCl and Cl2

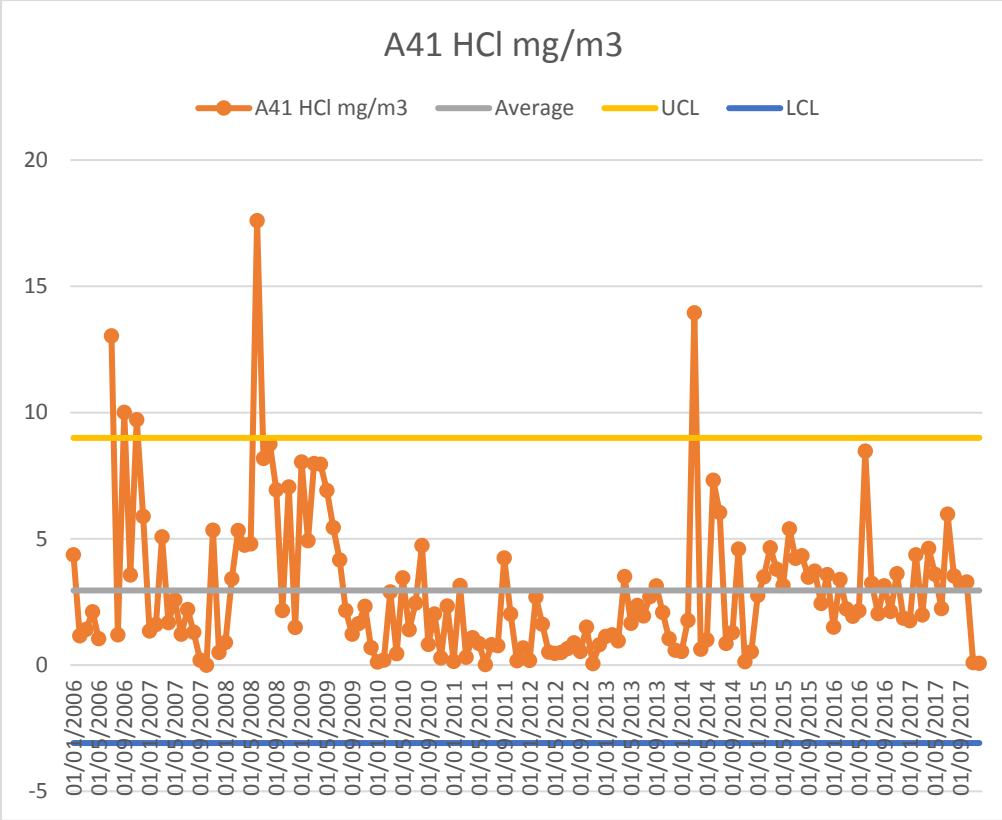
On 15th October 2017, during start up after annual shutdown, the Energy Recovery Unit (ERU) was operated for a period of 14 hours with a MeCl feed level above that defined in our procedures.
W941 contained Nitrogen and this was vented to the ERU via W930 and W945 refrigeration unit. The refrigeration unit was unavailable. MeCl from W930 was carried with the Nitrogen from W941 into the ERU feed surge tank. Our procedures require the Refrigeration unit to be on line to remove the MeCl from the ERU feed stream.
We are confident that the MeCl will have been consumed in the ERU chamber and that the excess HCl generated was removed by the caustic scrubber. It is possible we exceeded our Cl permit limit.
Operators report taking vent samples during the excursion, in line with our procedures and report these as being within permit limits.

A43 (W922 final scrubber) – HCl

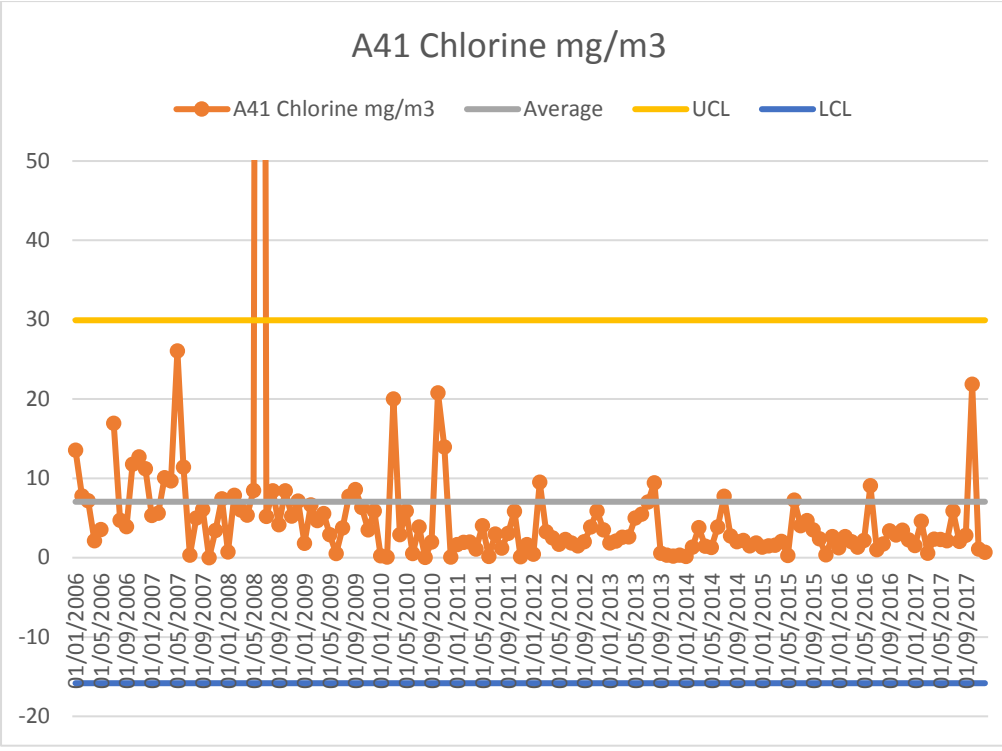
On 3/12/17 sample results indicated above permit limit – measured using tube samples from scrubber vent are taken once a shift by operators when plant running> 850kg/h
Plant shut down and scrubber opened up for investigation.
Scrubber packed section found to be channeled, therefore less water contact to scrub HCl.
Scrubber packing topped up and all spray nozzles checked prior to putting back on line.

Air monitoring

Trends for Monthly monitoring

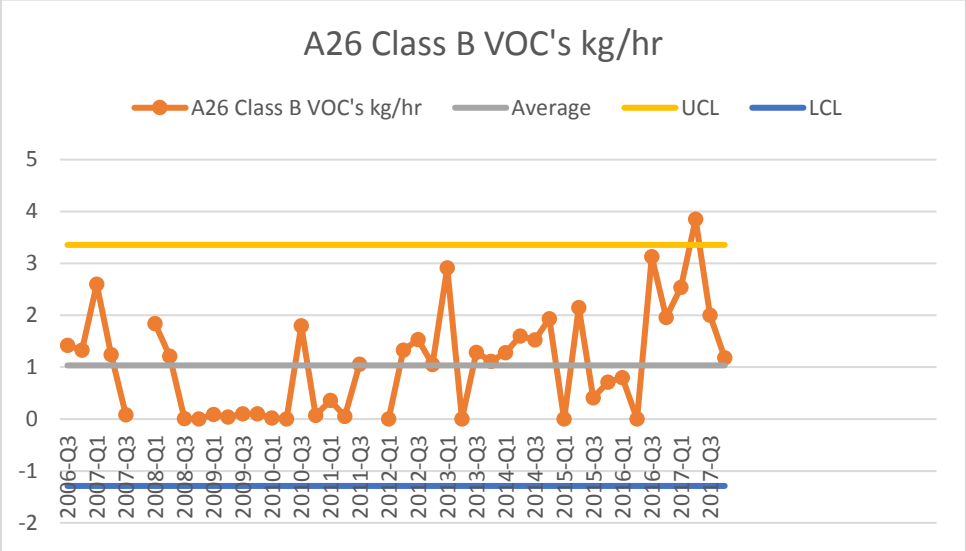


Results in control and within permit limit (15mg/m3).

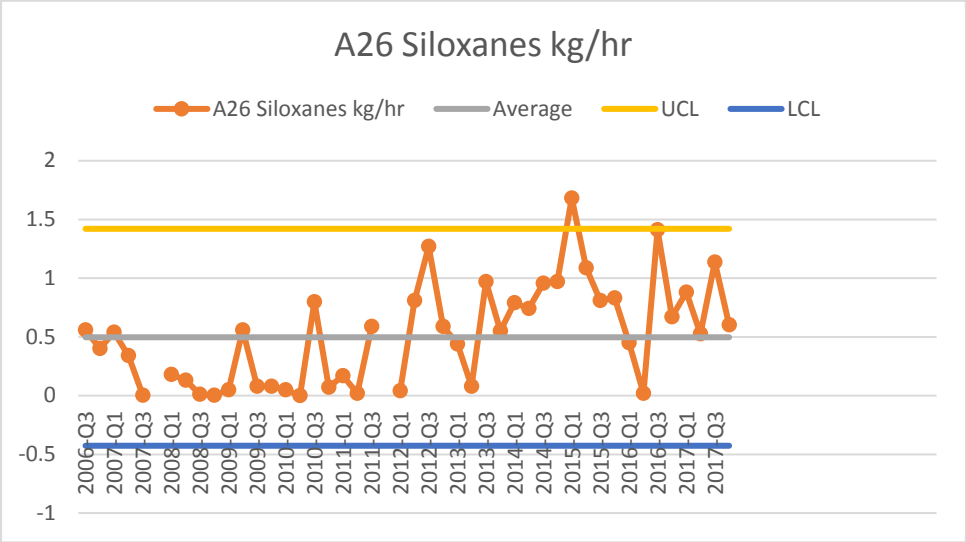


Results in control, 1 point above the annual average limit. This sample was taken during a period of transition between having the caustic column online and it not being online, following caustic supply shortage.

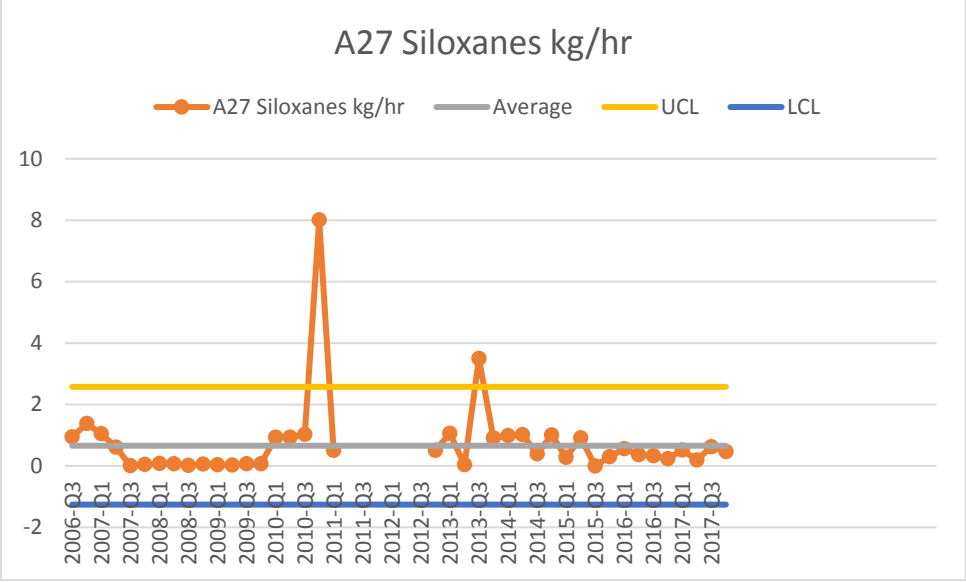
Trends for Quarterly monitoring:



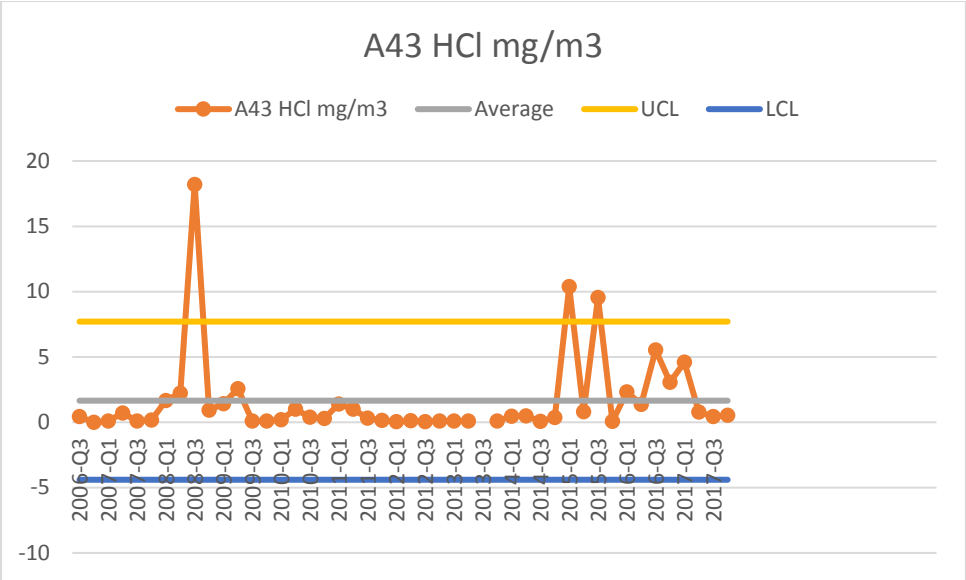
1 result just outside of the upper control limit, but 2 subsequent samples have been back in control. There was no specific assignable cause.



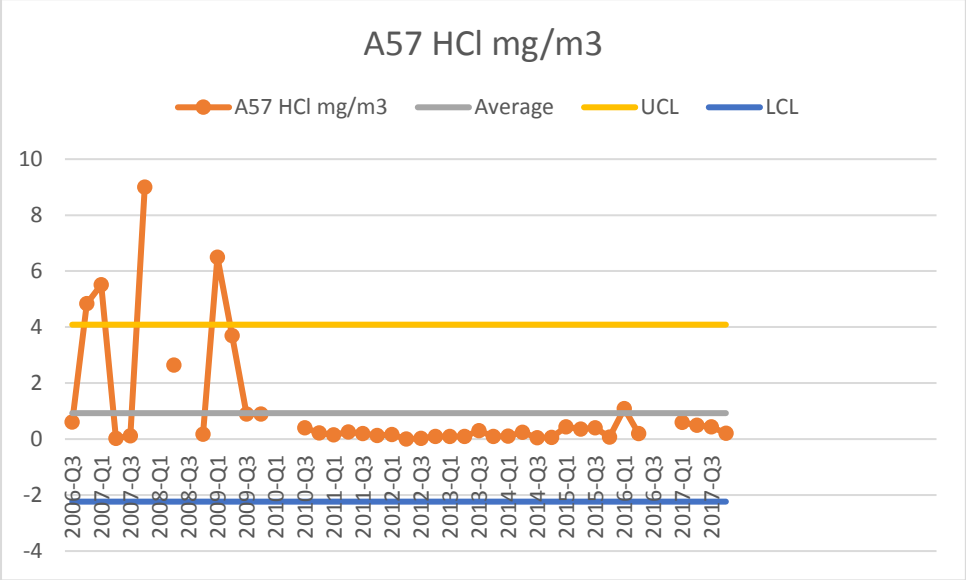
Results in control.



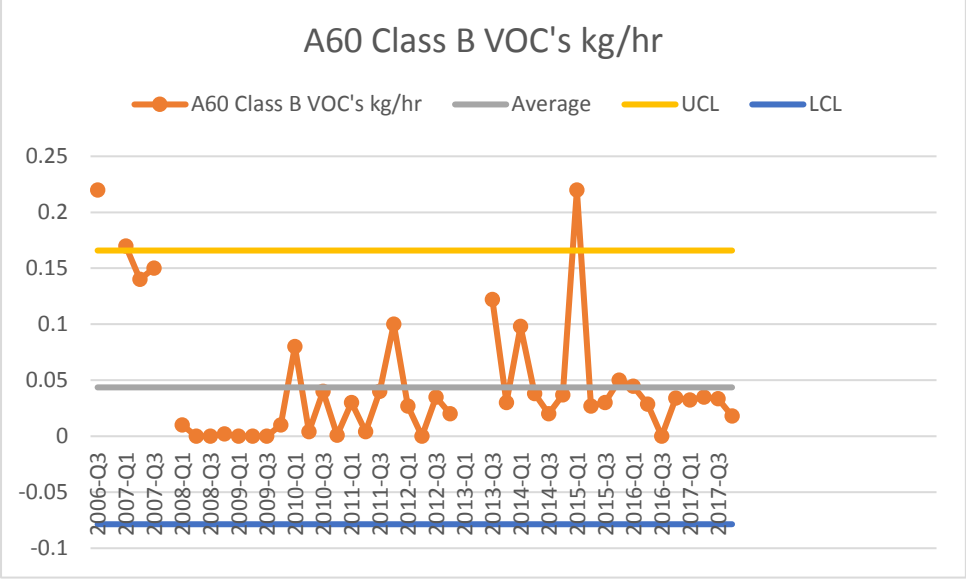
Results in control.



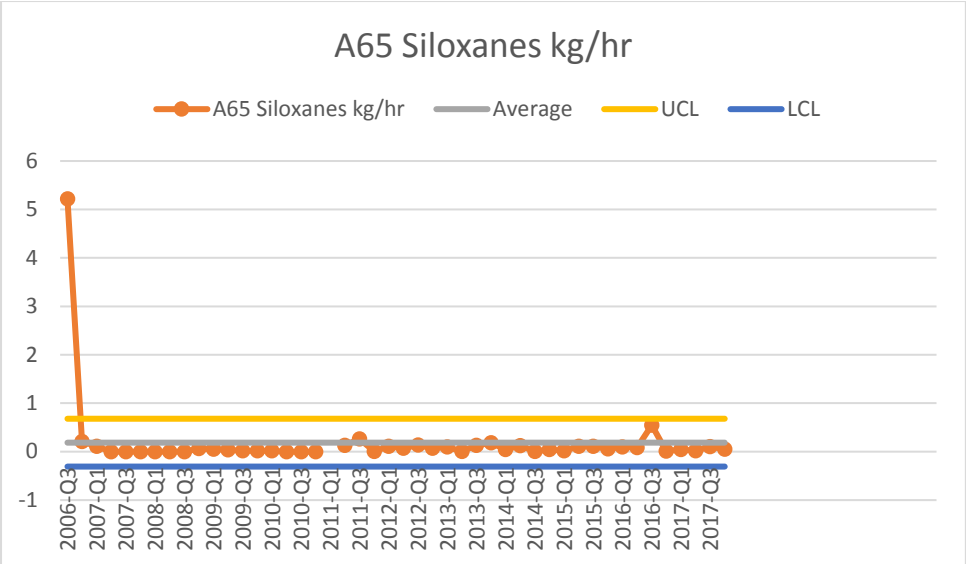
Results in control and within permit limit (10mg/m3).



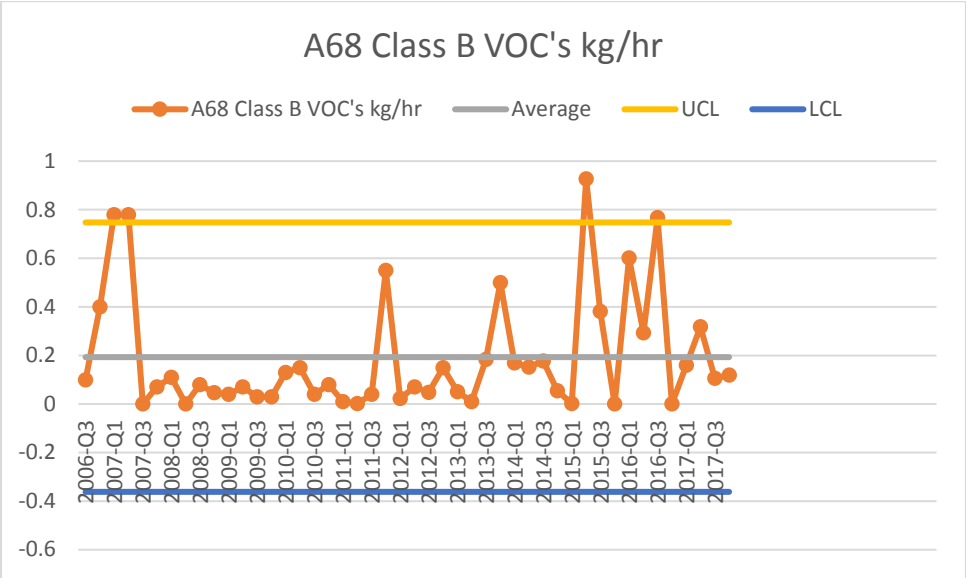
Results in control and within permit limit (10mg/m3).



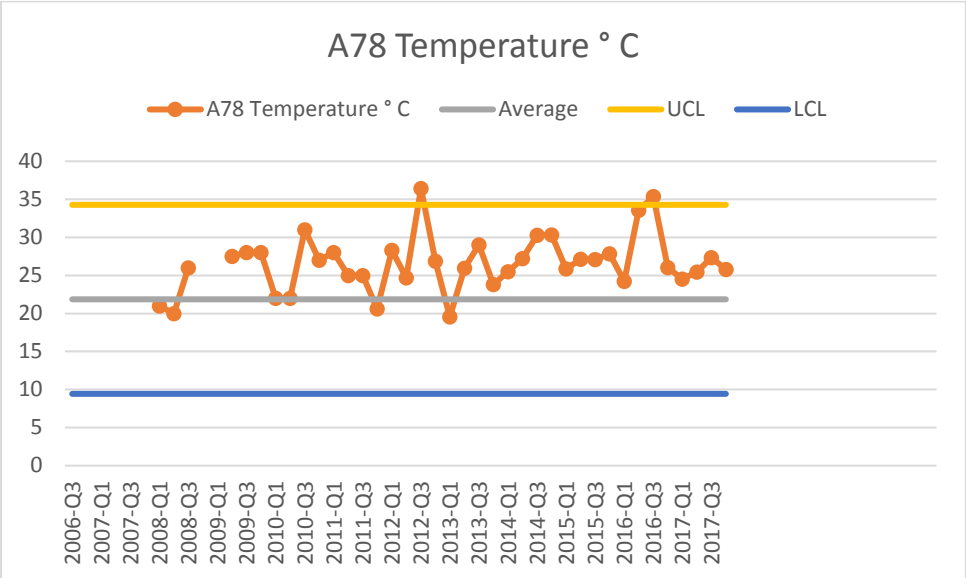
Results in control.



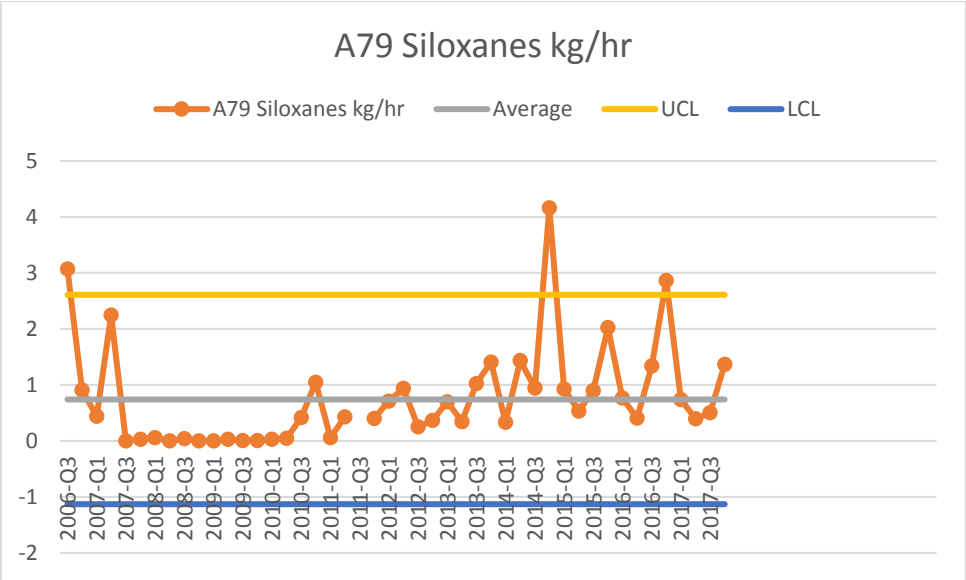
Results in control.



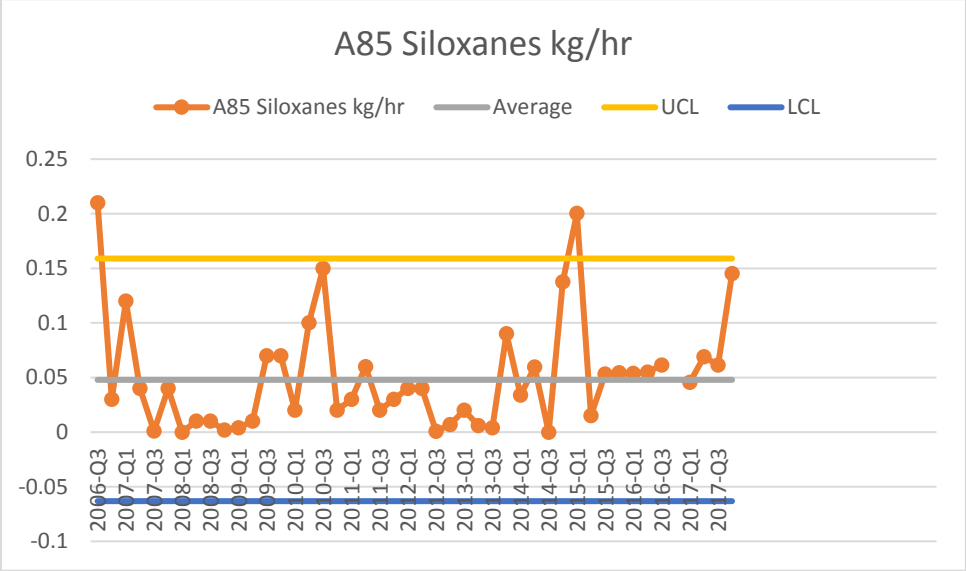
Results in control.



Results in control.

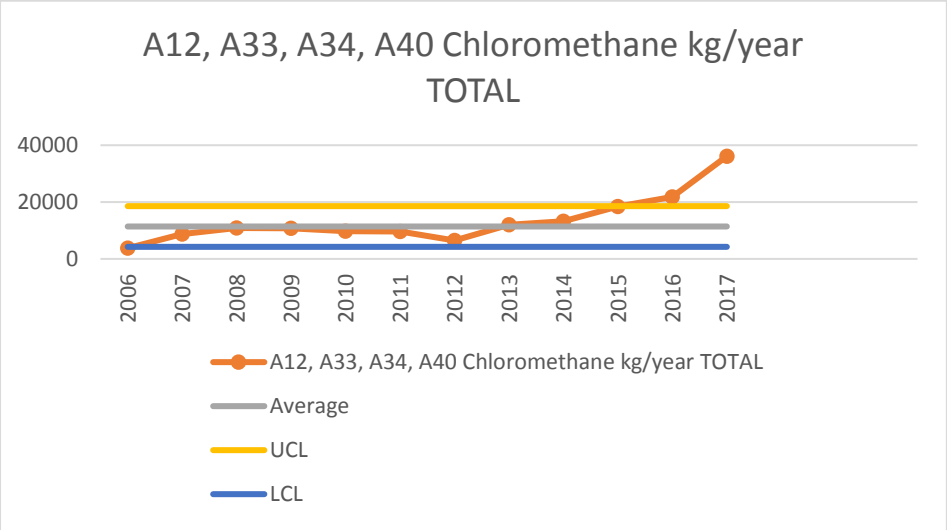


Results in control.



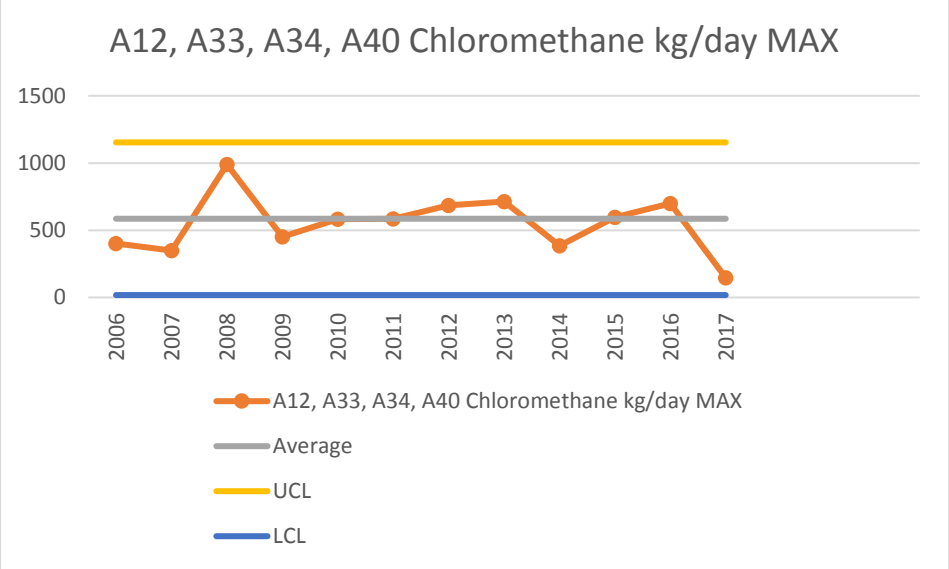
Results in control.
Q4 result was higher than normal. This will continue to be monitored.

Trends for Annual monitoring:

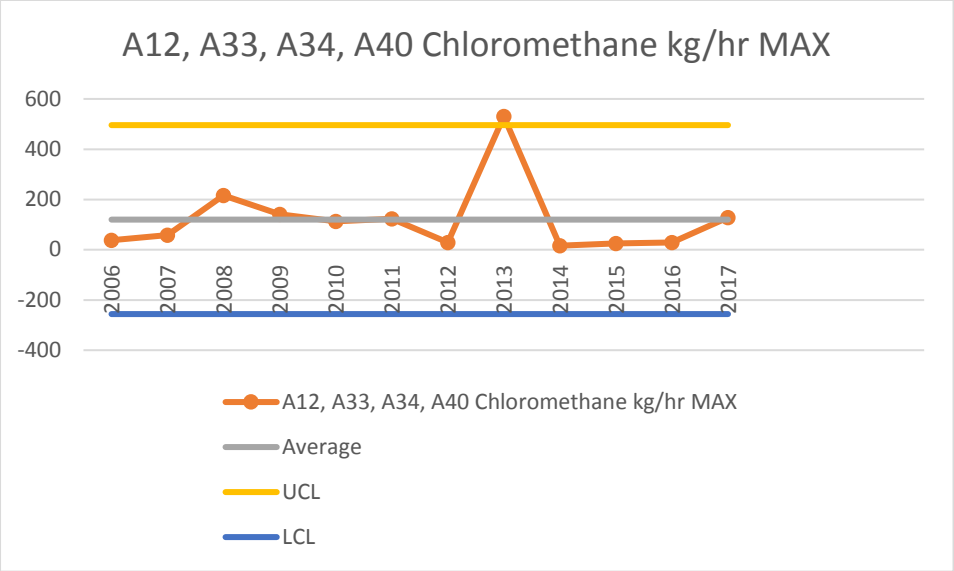


Results out of control high but within permit limit (60,000 kg/year).

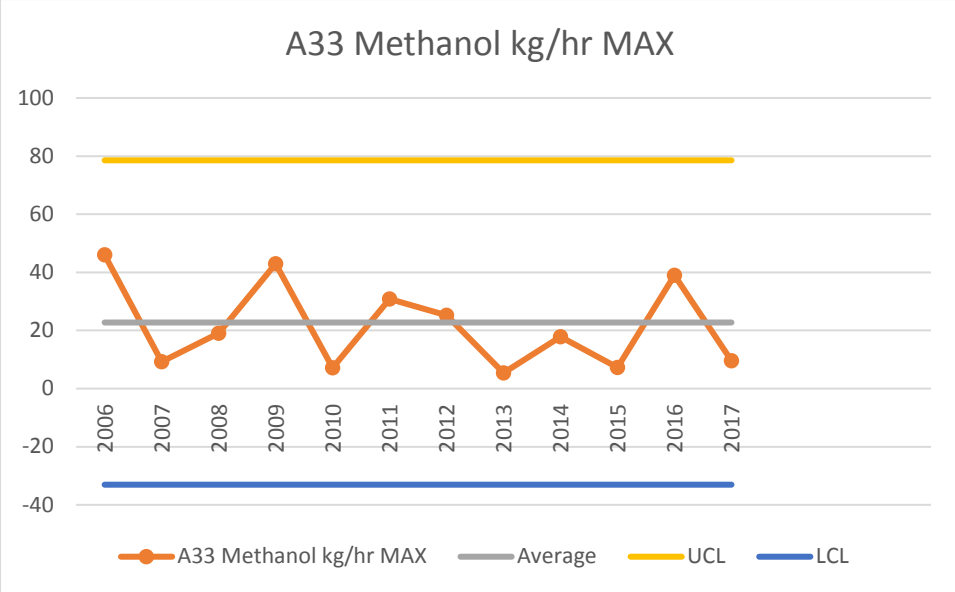
This is a conscious decision to allow Dow Corning to increase the online time of one of the Recovery processes, thus reducing the quantity of solid hazardous waste produced.



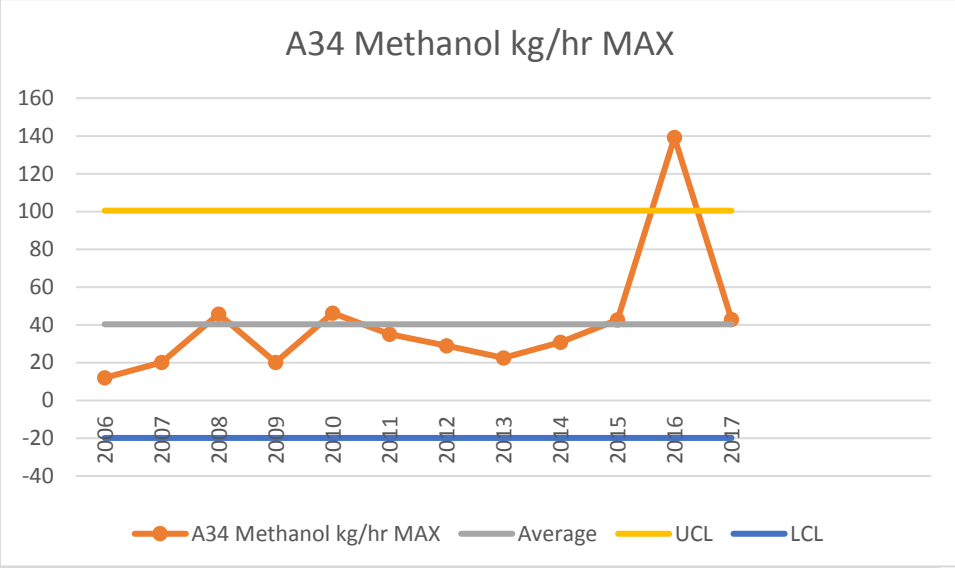
Results in control and within permit limit (1000 kg/day).



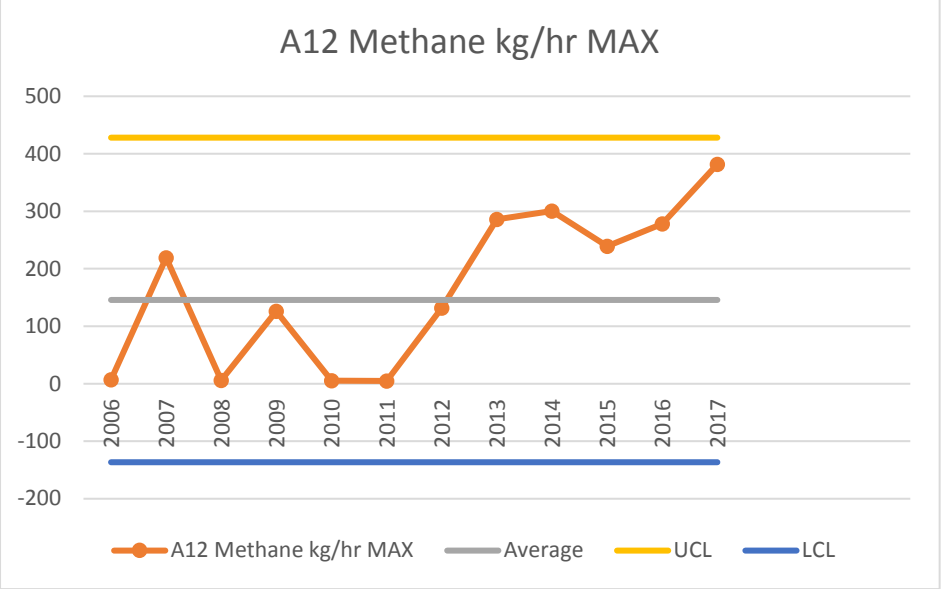
Results in control and within permit limit (250 kg/hr).



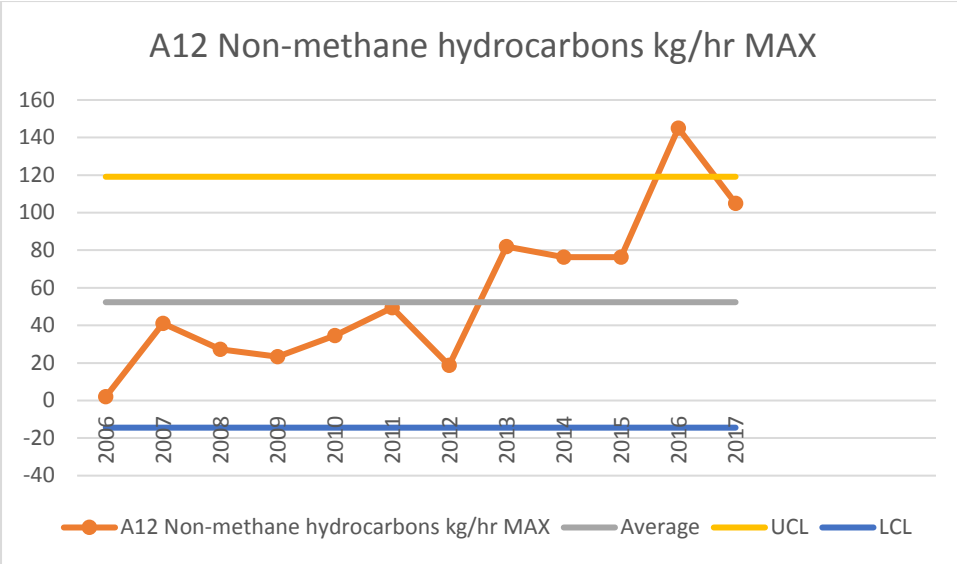
Results in control and within permit limit (max flow of 60kg/hr).



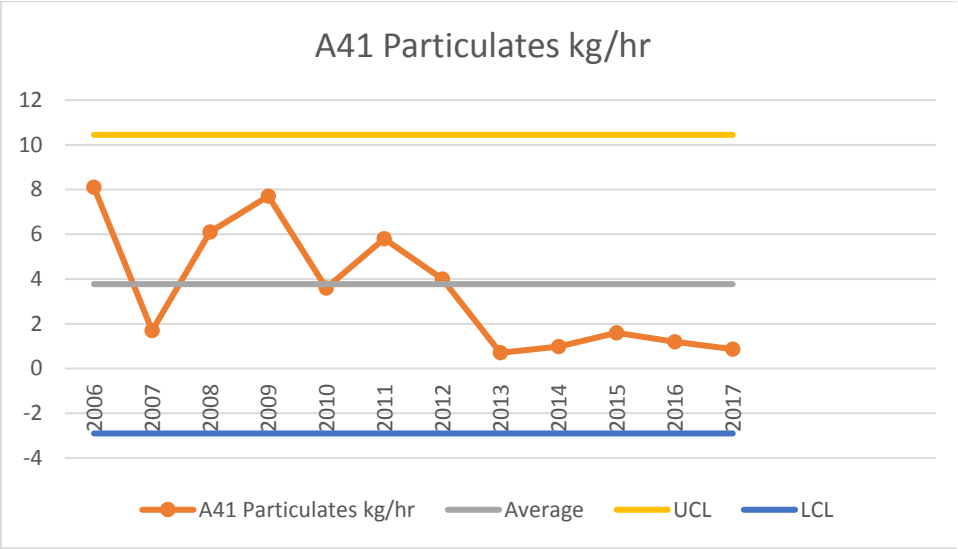
Results in control.



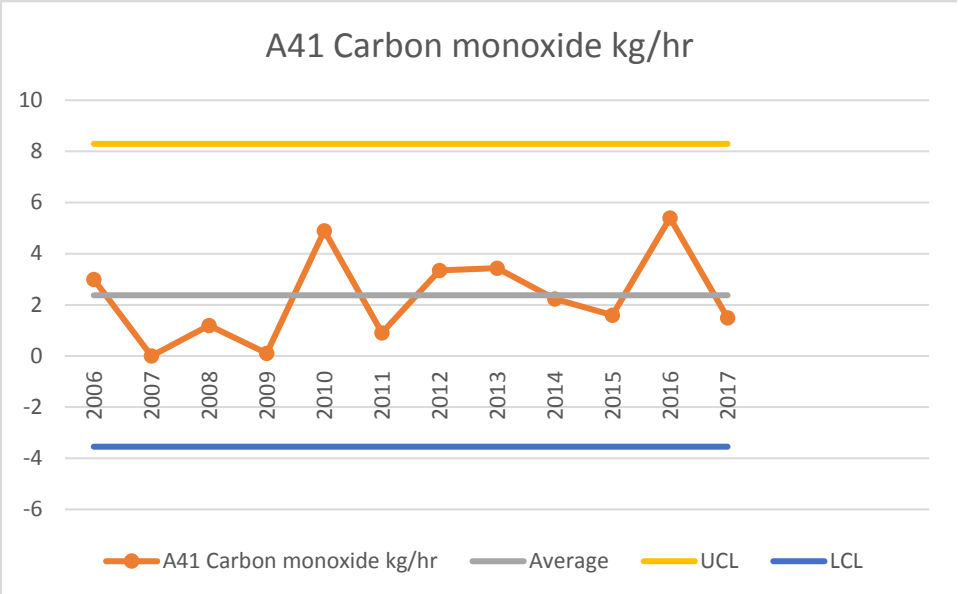
Results in control.



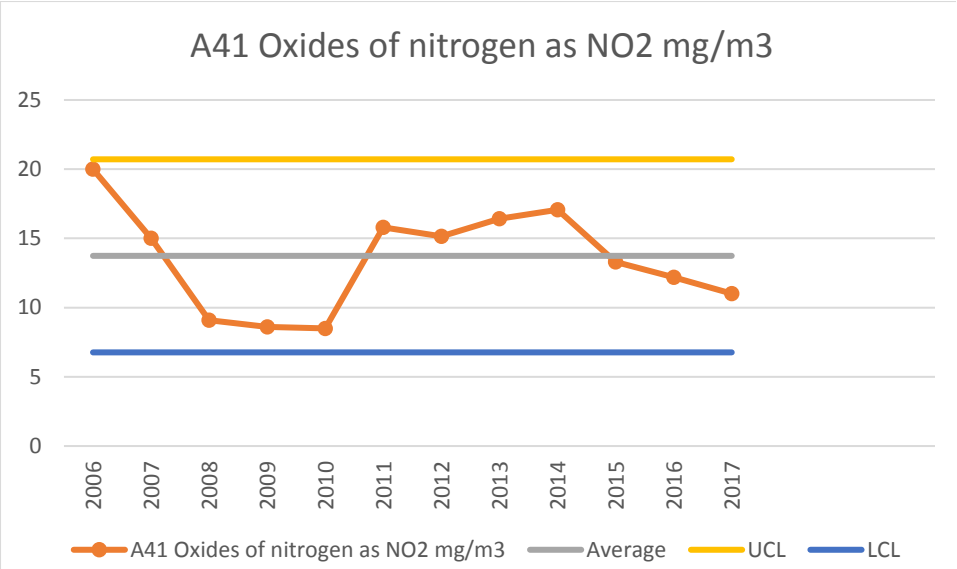
Results in control.



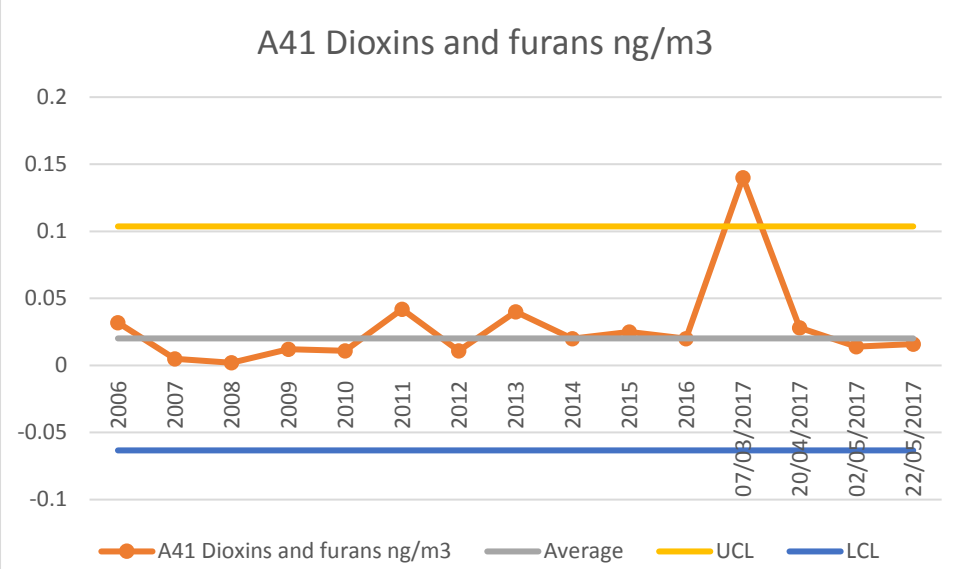
Results in control and within permit limit (10 mg/m3).



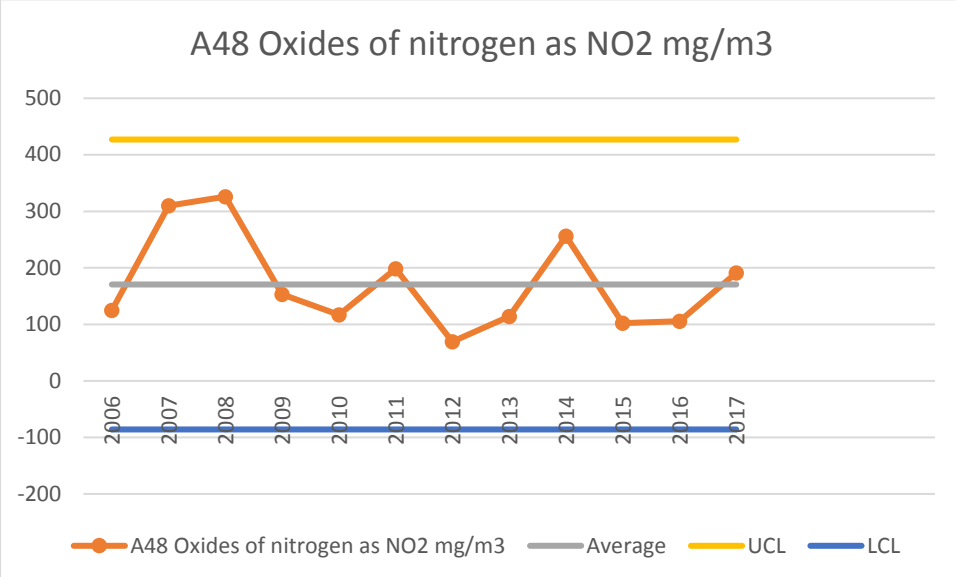
Results in control and within permit limit (50mg/m3).



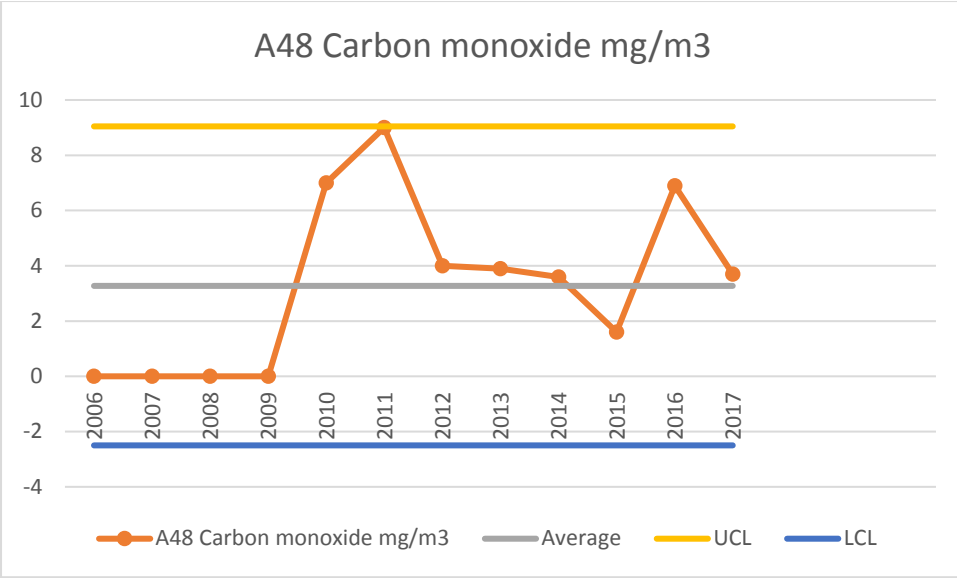
Results in control and within permit limit (100mg/m3).



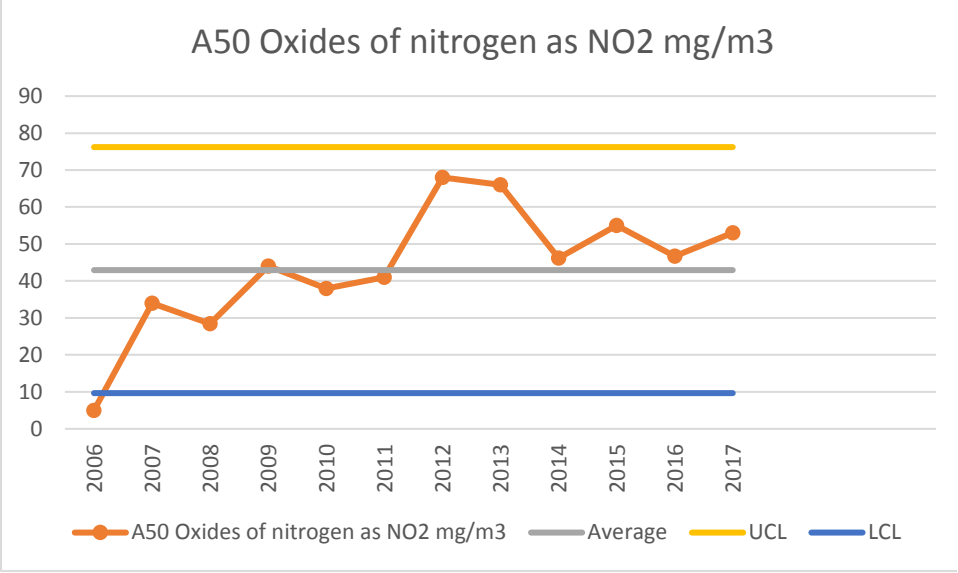
Annual result obtained in March out of control high and permit exceedance. Further samples taken, following RCI and action completion. Results in control and within permit limit (0.1ng/m3).



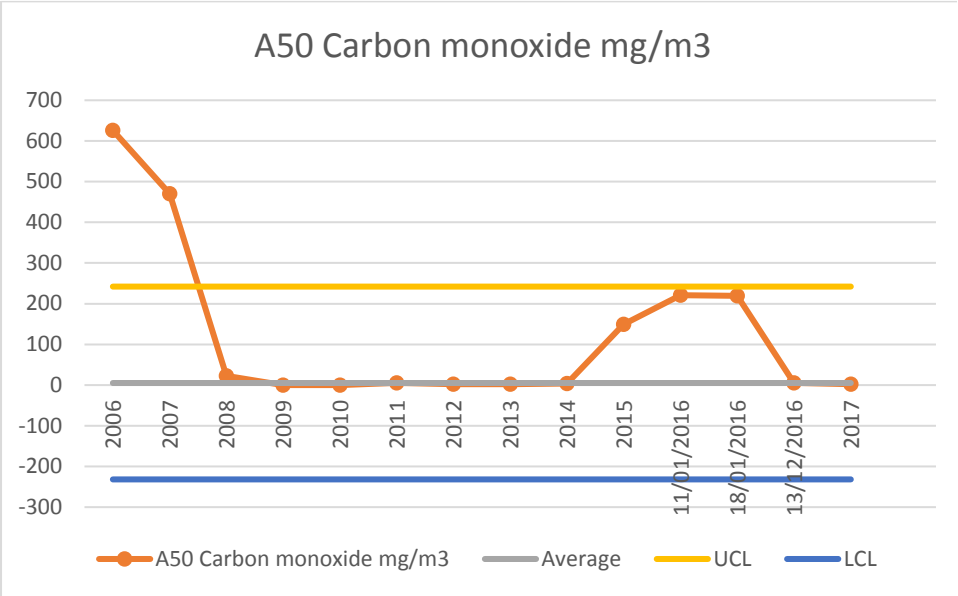
Results in control.



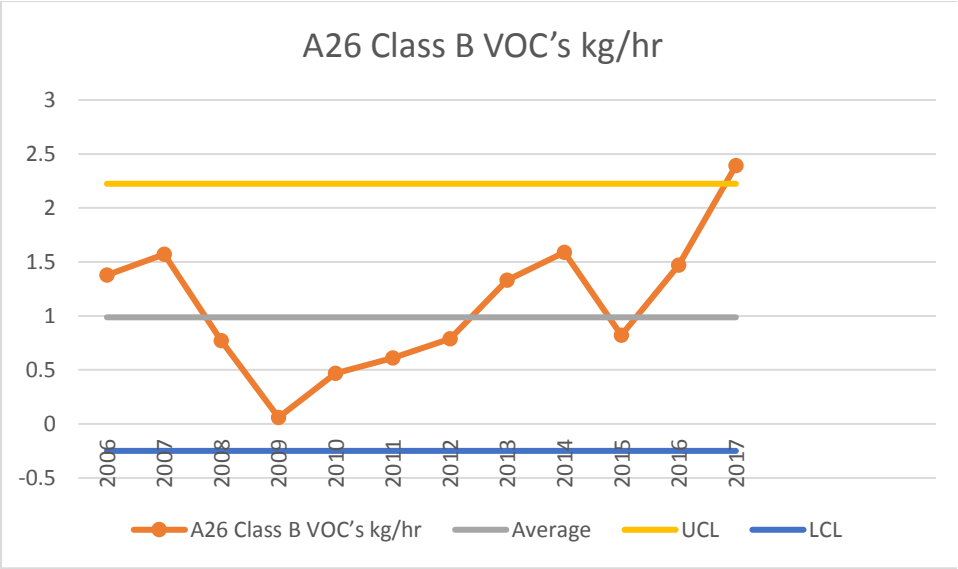
Results in control.



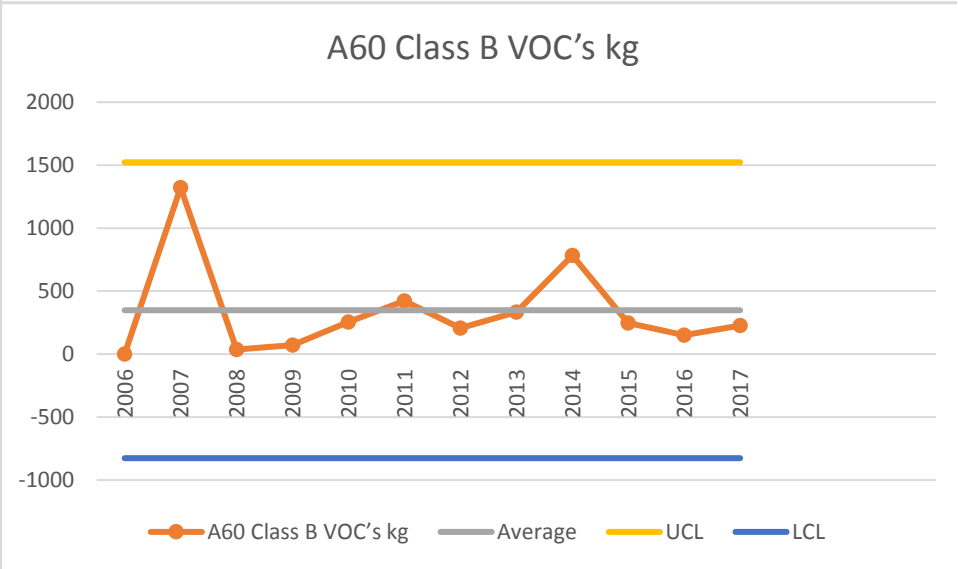
Results in control and within permit limit (200mg/m3).



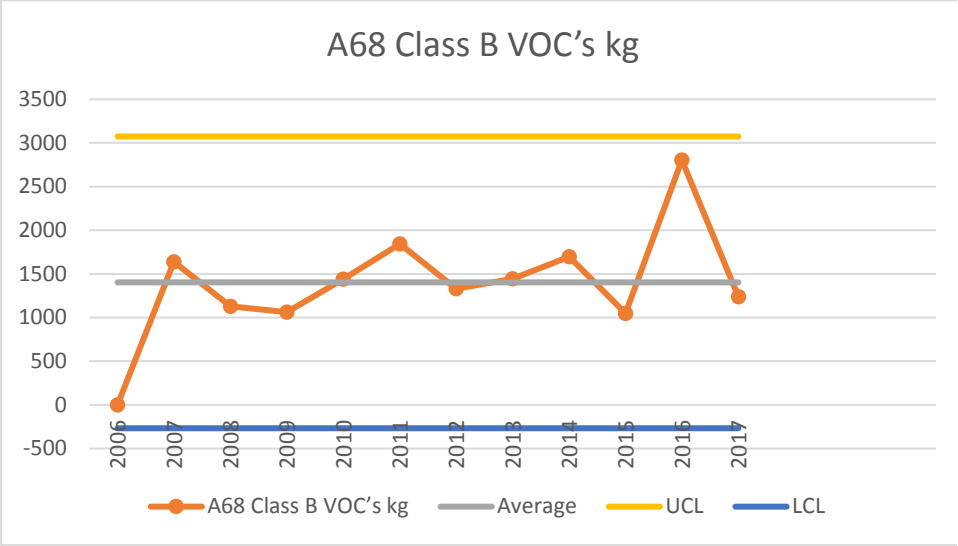
Results in control and within permit limit (200mg/m3).



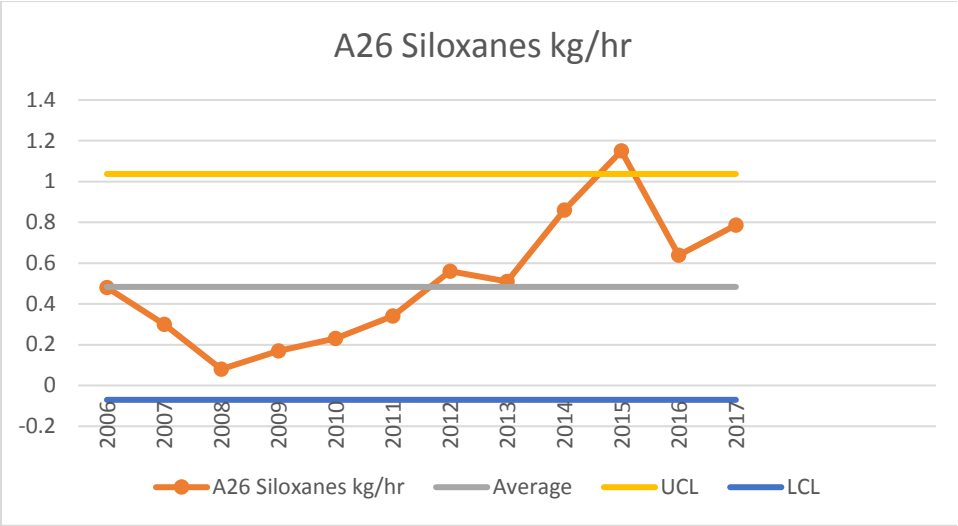
This result is out of control high. VOC's contained in this vent are carried forward from an earlier process. There are a large number of variables which affect this. We will investigate this if the quarterly results continue to track higher than normal.



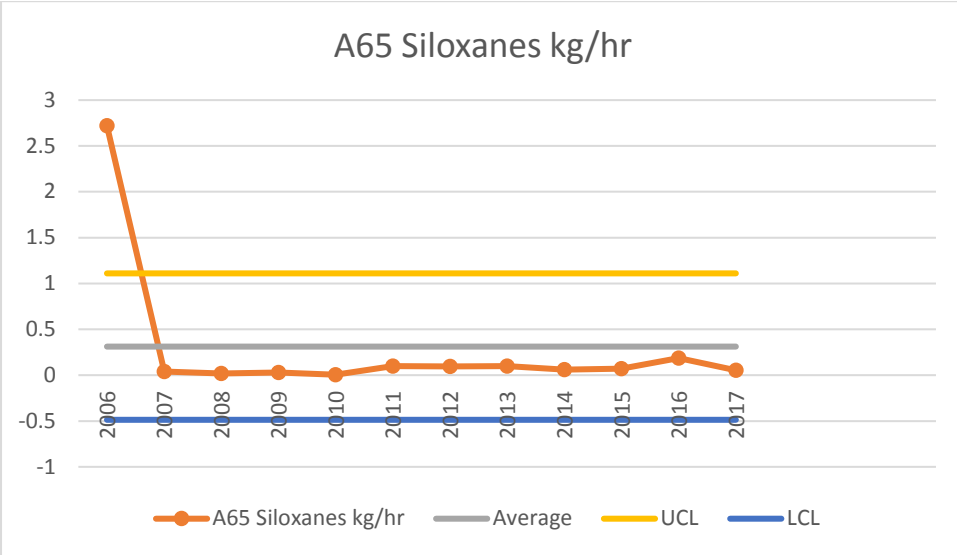
Results in control and within permit limit (5,000 kg/yr).



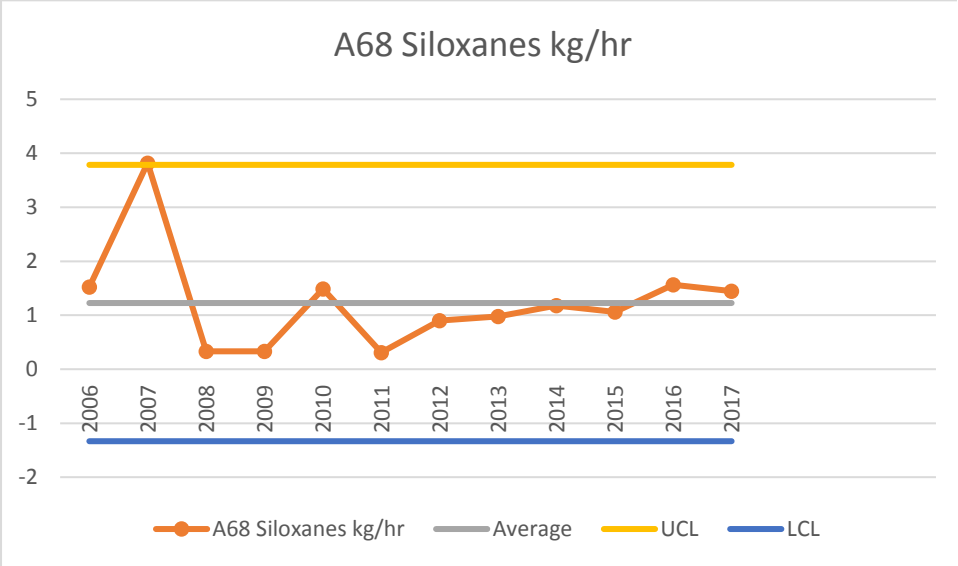
Results in control and within permit limit (5,000 kg/yr).



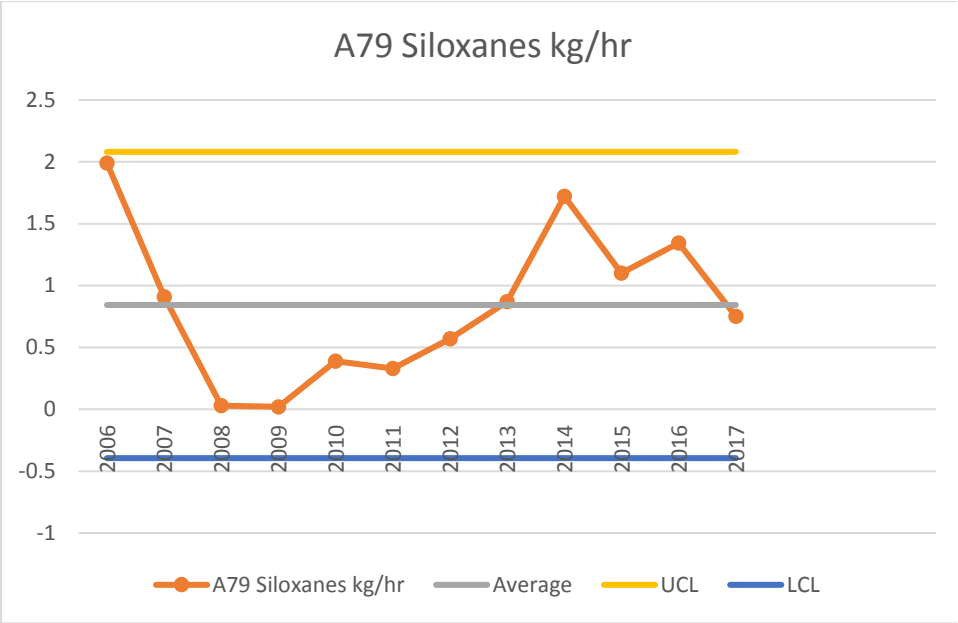
Results in control



Results in control



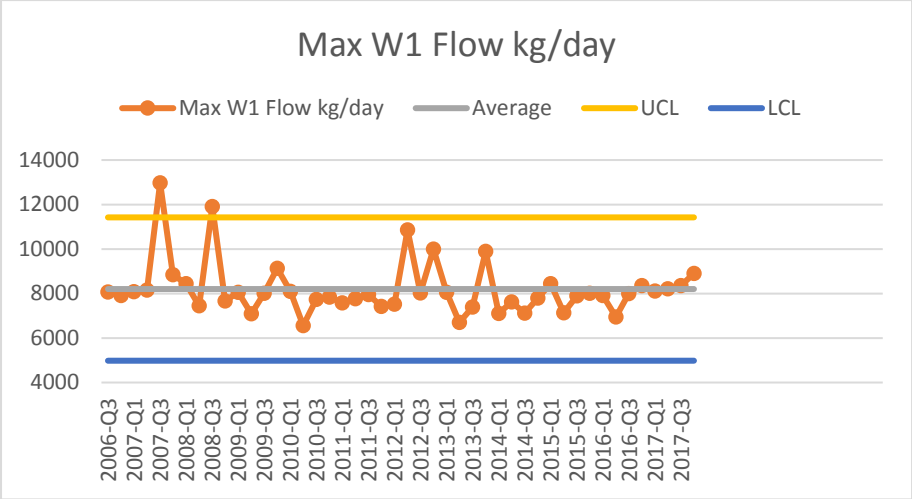
Results in control



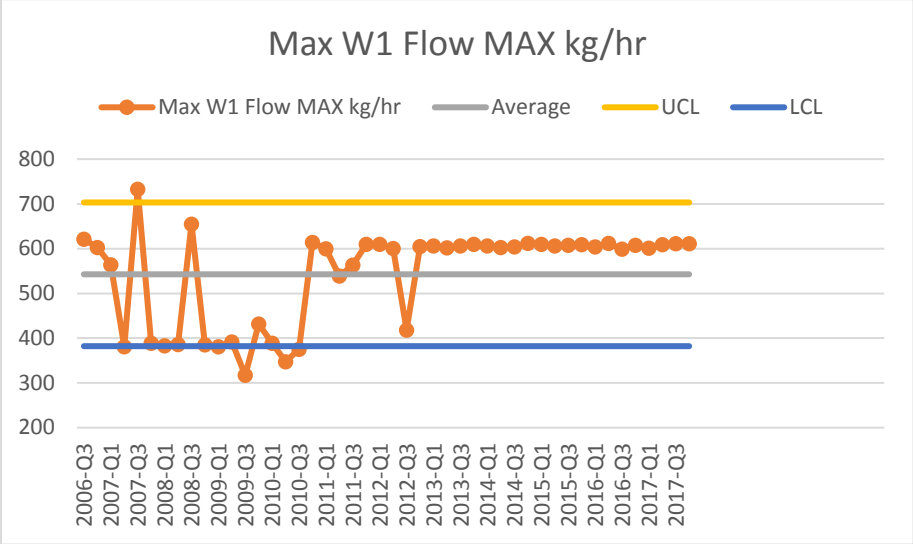
Results in control

Water monitoring

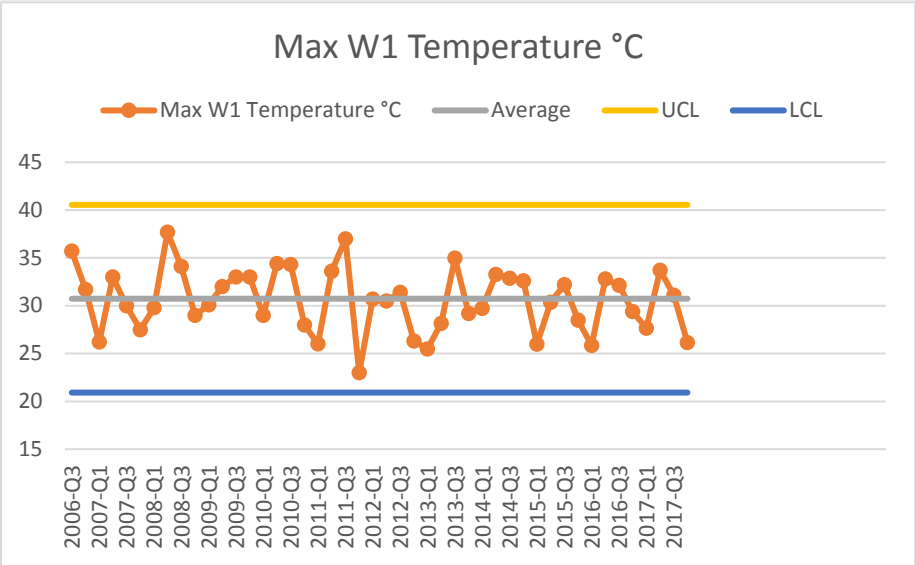
Trends for Quarterly monitoring:



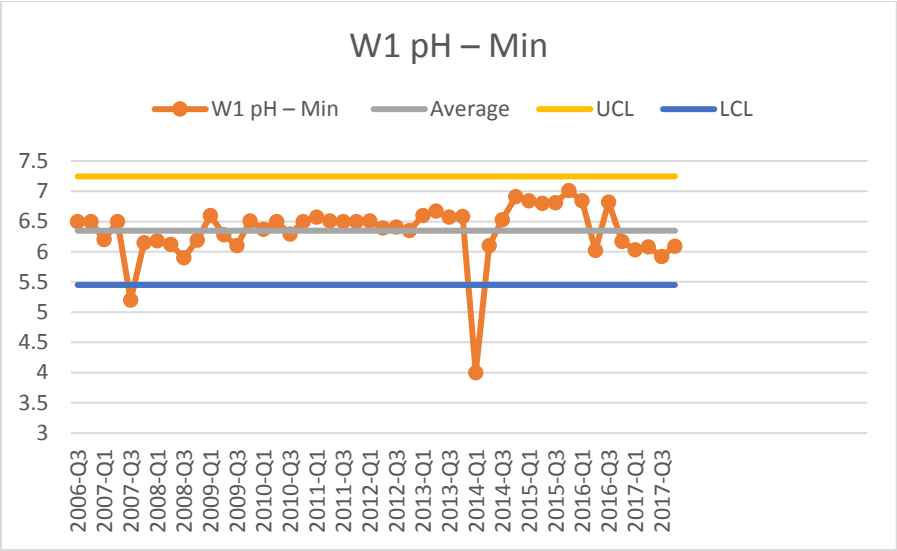
Results in control and within permit limit (11,000 m3/day)



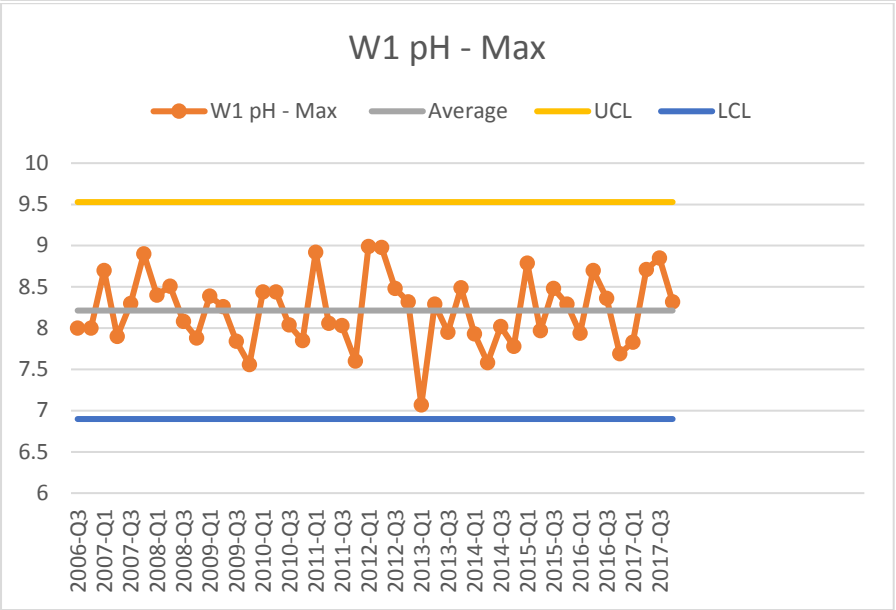
Results in control and within permit limit (625 m3/hr)



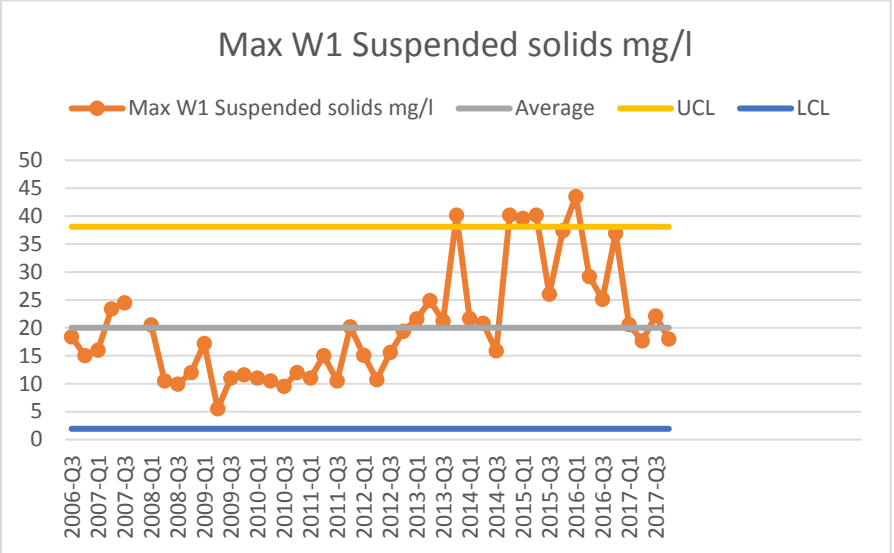
Results in control and within permit limit (40°C)



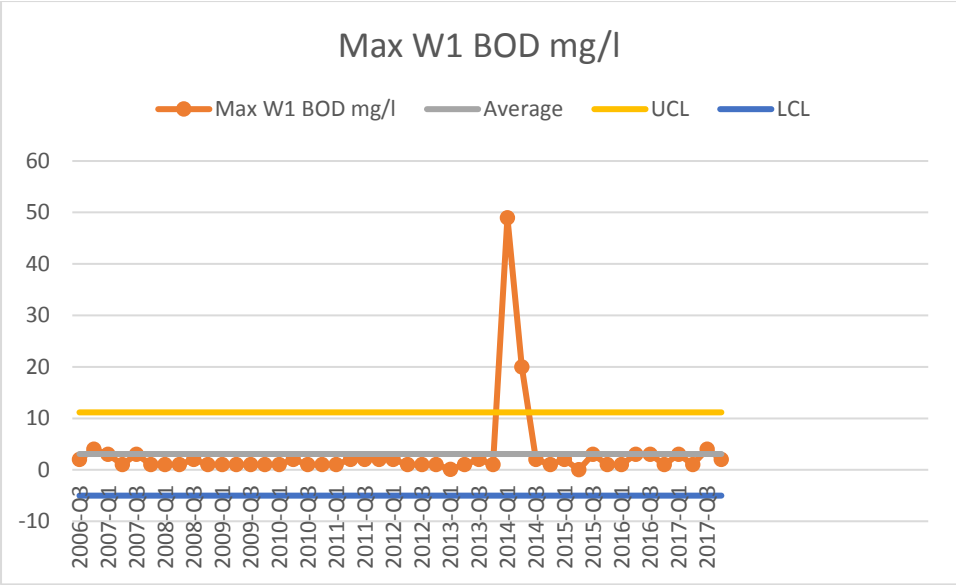
Results in control. Q3 instantaneous minimum result below permit limit, but when the uncertainty of the meter in taken into account, the result was within the permitted limit (>pH6). This was reported to NRW as a Schedule 5 when it was identified. Corrective actions have been put in place to prevent a recurrence.



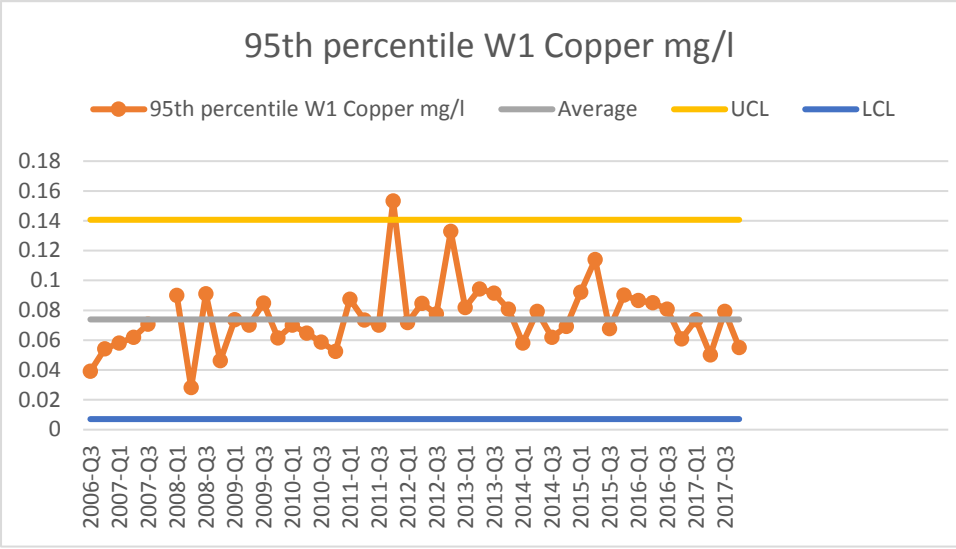
Results in control and within permit limit (<9)



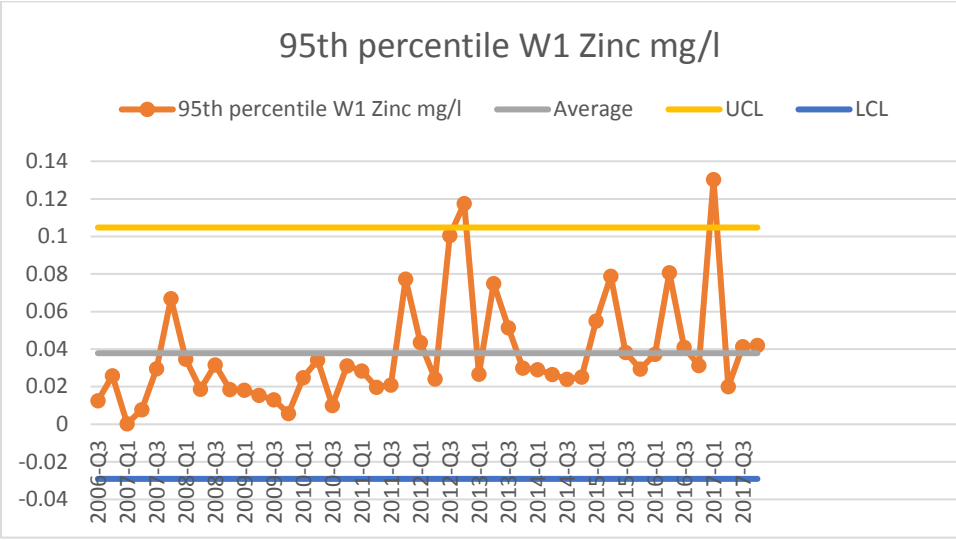
Results in control and within permit limit (30 mg/l)



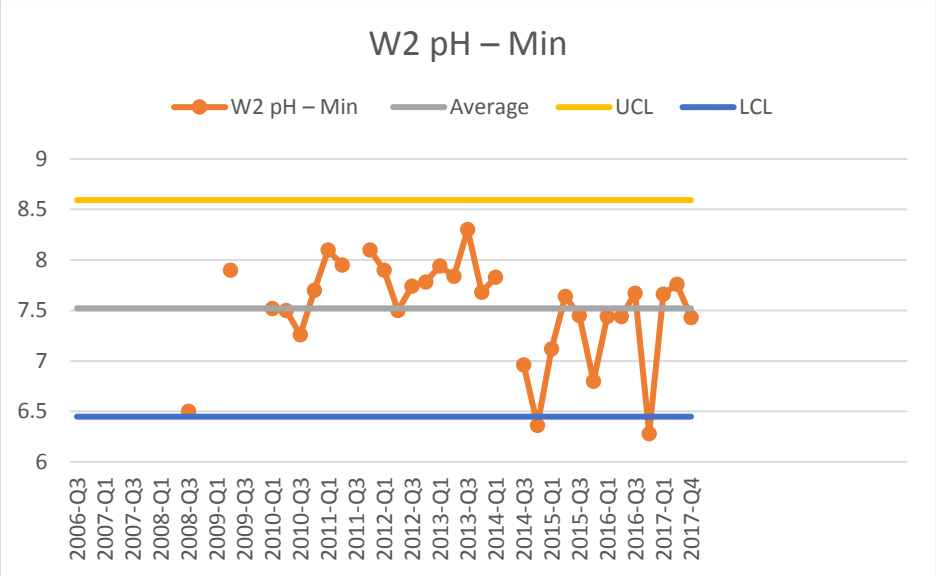
Results in control and within permit limit (20 mg/l)



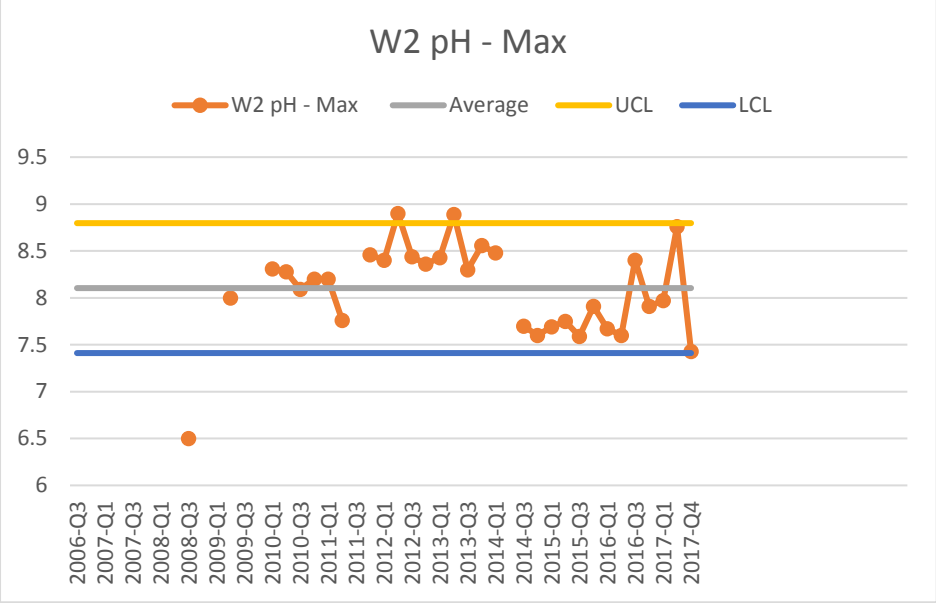
Results in control and within permit limit (0.1 mg/l)



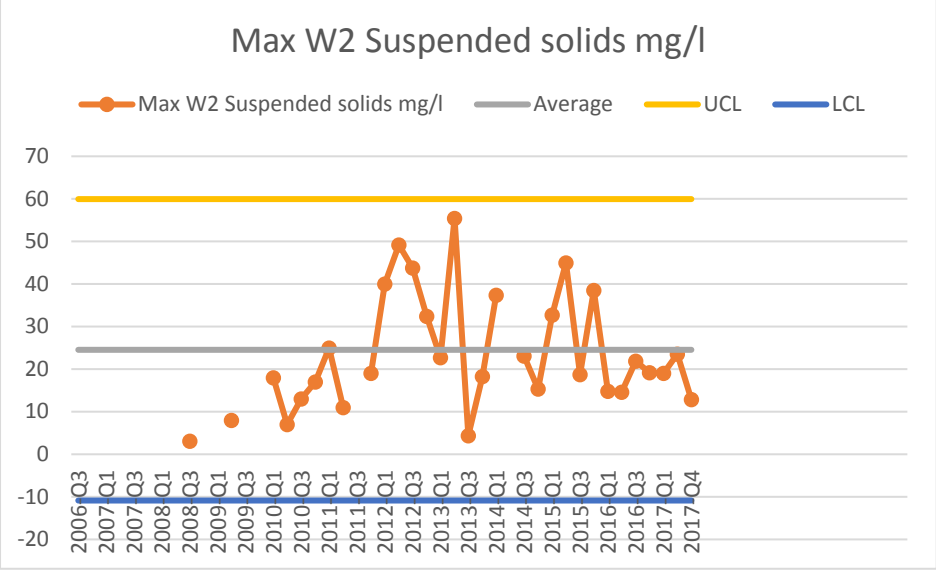
Results in control and within permit limit (0.5 mg/l)



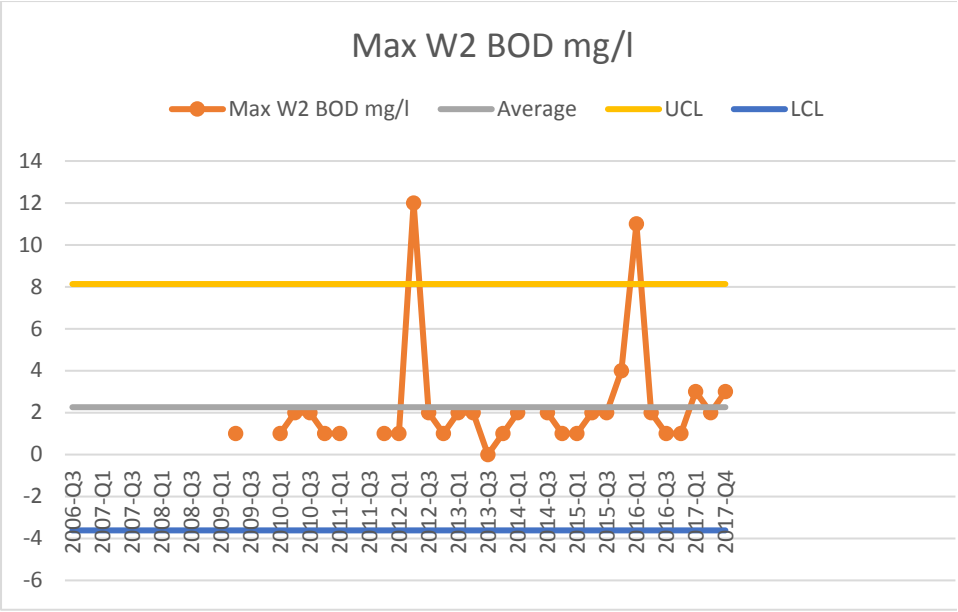
Results in control and within permit limit (>6)



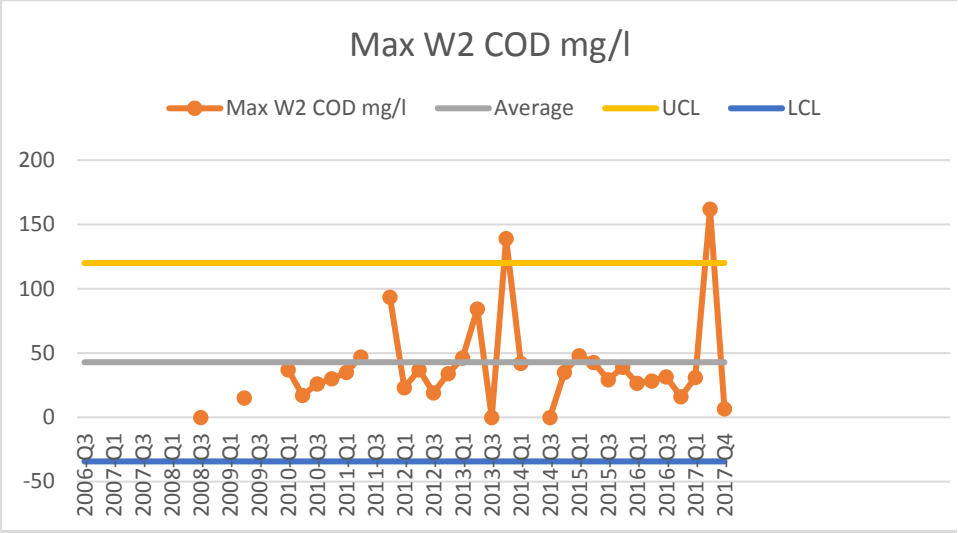
Results in control and within permit limit (<9)



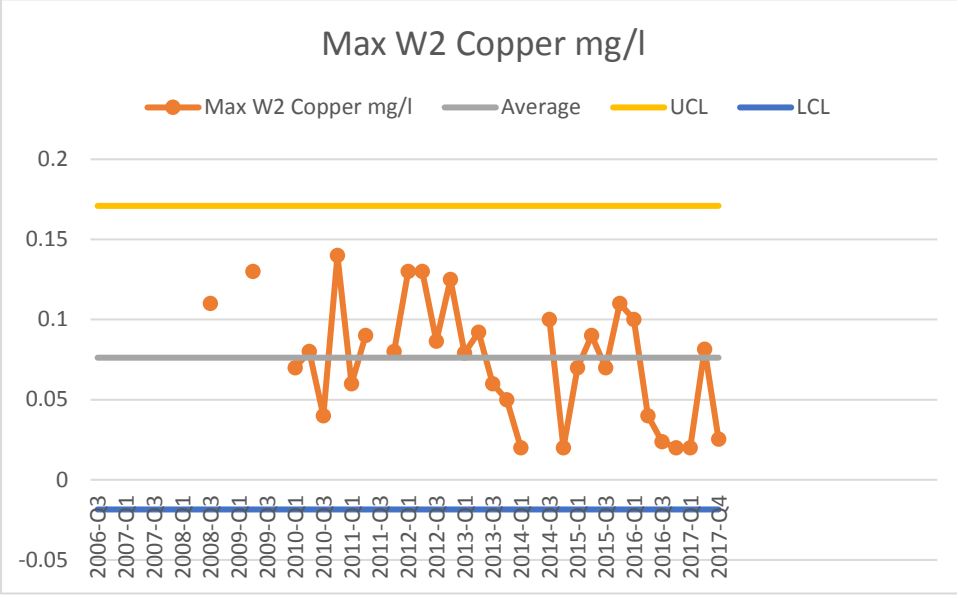
Results in control and within permit limit (30 mg/l)



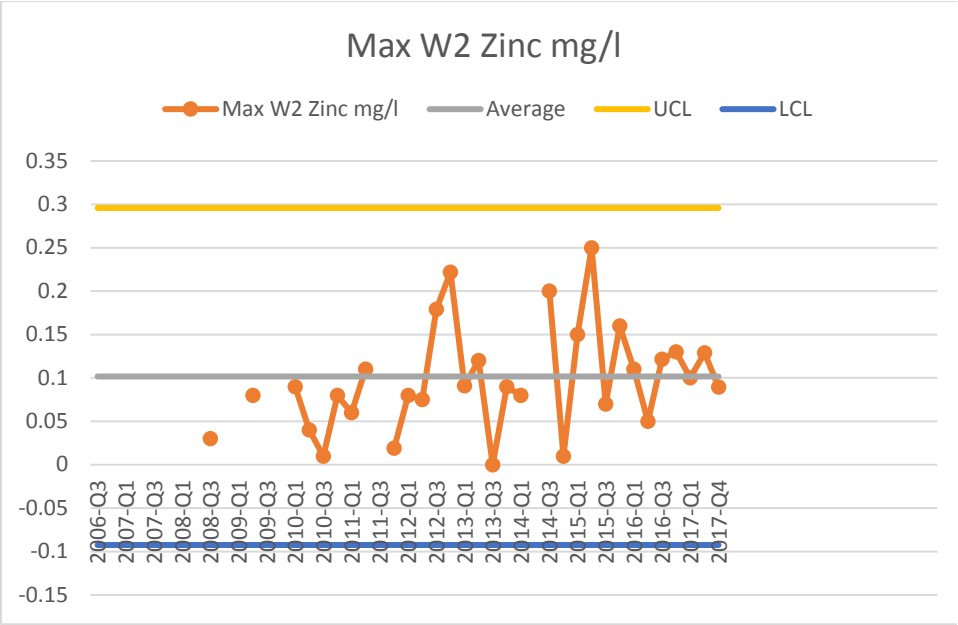
Results in control and within permit limit (20 mg/l)



Q2 result was 162 mg/l – which is above the permit limit – but within the permit condition which allows spot samples to be up to 50% above the permit limit (125 mg/l)



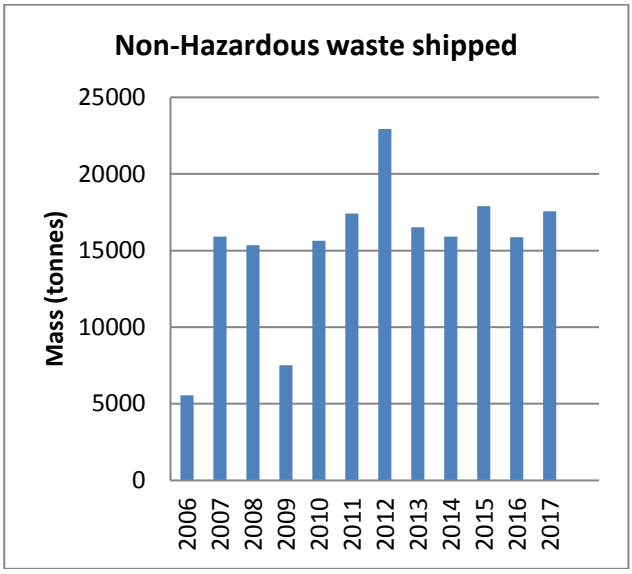
Results in control and within permit limit (0.15 mg/l)



Results in control and within permit limit (0.25 mg/l)

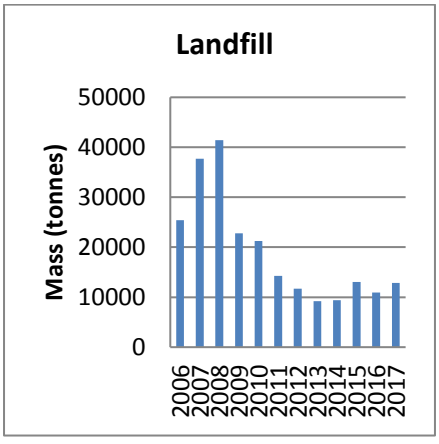
Waste

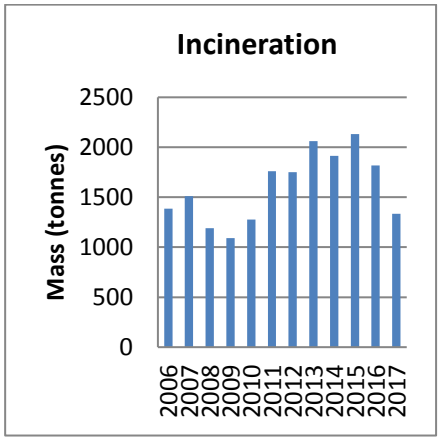
Waste shipped from the site was as follows:

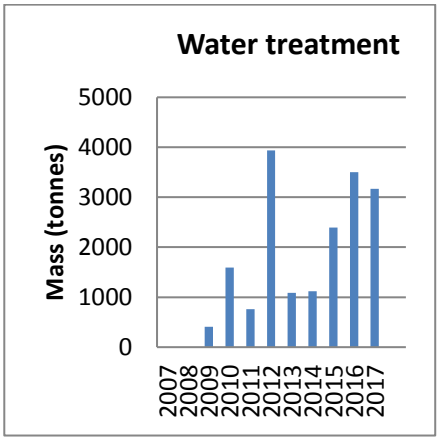


The increase in hazardous waste shipping during 2017 was eliminatingthe stockpile of DPR to allow the old site landfill to be closed.

Disposal

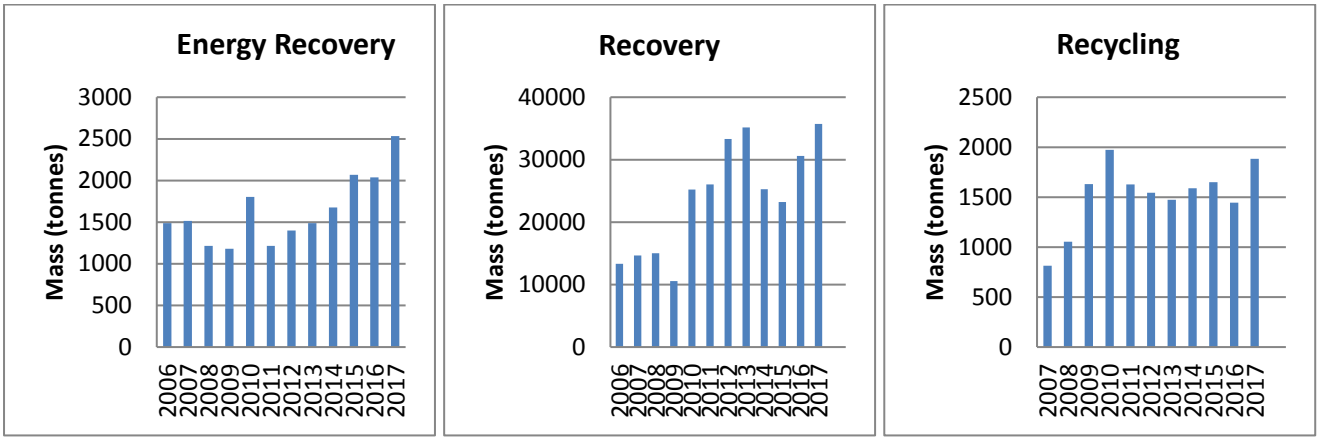






- Incineration was low this year due to one of our outlets struggling to process our materials.

Recovery



- Rubber to energy recovery increased due to not being able to send it to India for Recycling due to Indian legislation change.
- Recovery up this year due to the increase in shipping to eliminate the stockpile of Hazardous DPR to allow the old site landfill area to be closed

Complaints

There were 29 complaints to the Barry Industrial complex helpline in 2017

- 4 were for odour - None of the odour complaints were attributed to Dow Corning
- 23 were for noise –
    - 7 of the noise complaints were attributed to Dow Corning.
        - 6 related to a maintenance related activity on one night. By the time the source was identified the maintenance activity had been completed.
        - 1 related to the use of a pump and generator close to the perimeter of Dow Corning
    - Due to the high amount of other noise complaints Hunter Acoustics were appointed to carry out continuous monitoring to identify and assess potential on-site sound, sources of the complaints, as well as establish a baseline plant noise level for future comparisons. Outcome - Justification that plant activities are consistently executed day and night and therefore does not explain the intermittent noise or spikes in noise levels recorded during the study. Noise levels from the chemical complex have not changed since 2002 and is typical for an industrial complex.
- 1 other complaint was received – it was an observation that the condensation from the cooling towers was more than normal. The level was normal on that day, the weather conditions made it appear more.