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4.2.7 Environmental Management System (EMS) Review 2015 EPR Permit BR9685IX, Dow Corning Ltd

In order to satisfy ISO14001 requirements, reviews of environmental performance and the effectiveness of our EMS are held by the Dow Corning Site Staff on a regular basis. In addition, as a formal environmental management system is in place it is a condition 4.2.7 of Dow Corning PPC permit (BRX9685IX) to provide an annual summary report of the previous year's improvement targets and progress towards those targets.

This report provides a summary of the main items presented along with our improvement plans for 2016.

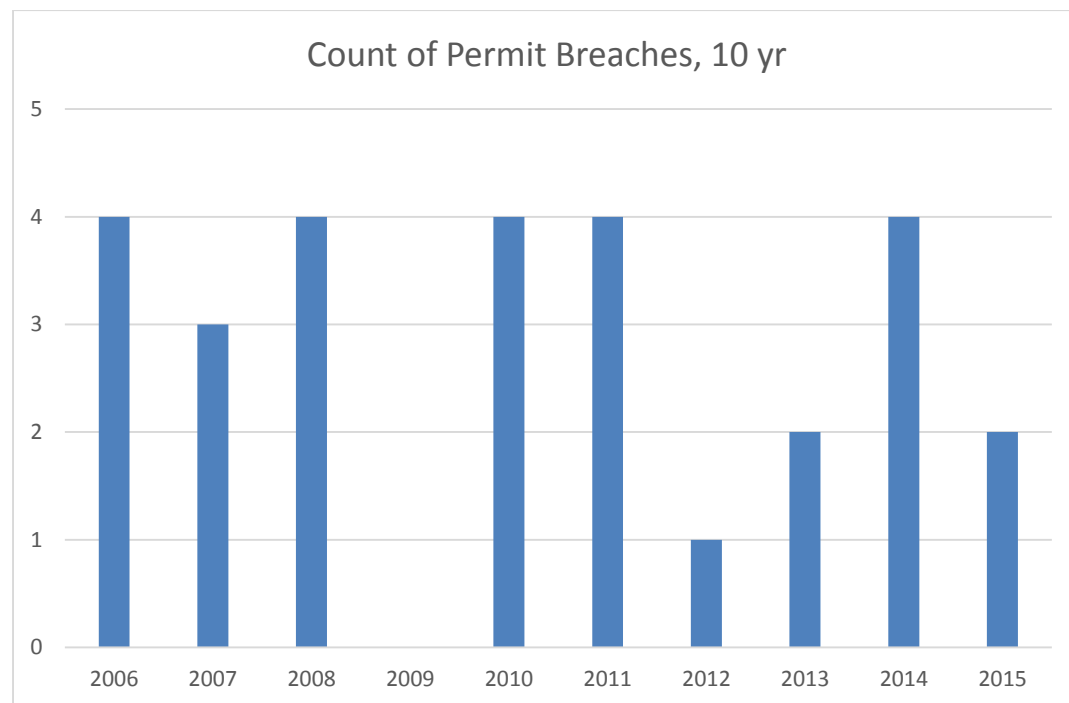
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Performance review

Incidents



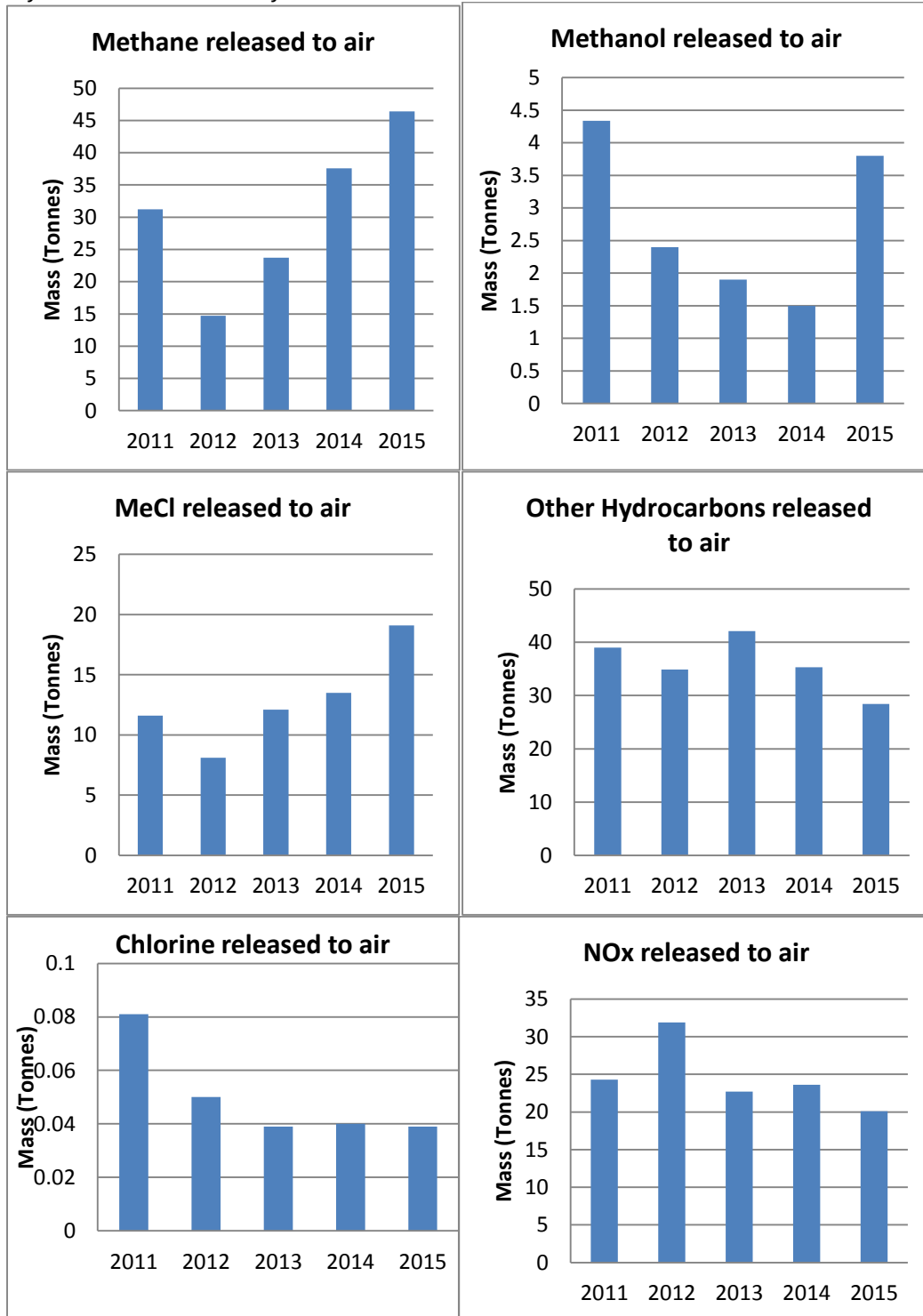
There were two permit breaches in 2015:

- A43 authorized vent HCl
Quarterly testing of A43 vent gave a 10.36mg/m³ reading for HCl versus a permit limit of 10mg/m³. Investigative work did not find any root cause for the high result. The Q3 result was within the permitted levels. In addition the operational parameters of the scrubber on this vent were updated to give increased flow.
- Final Effluent discharge, W1, elevated copper
There were 9 instances (vs a permit tolerance of 4) where copper was higher than the permitted level of 0.1mg/l. This was related to issues with the clarifier and vac drum operation within the waste water treatment plant which resulted in solids carry over to the river entraining copper.
- Fire in W306
Although this was not classed as a breach a schedule 5 report was issued to NRW
A small fire was observed on the polymethylhydrogen siloxane plant. Poor assessment and planning for hot works in the area resulted in a small amount of fluid in a filter drip catching alight from the hot work sparks

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Air

5 year trends for the Barry Site releases to air are as follows:

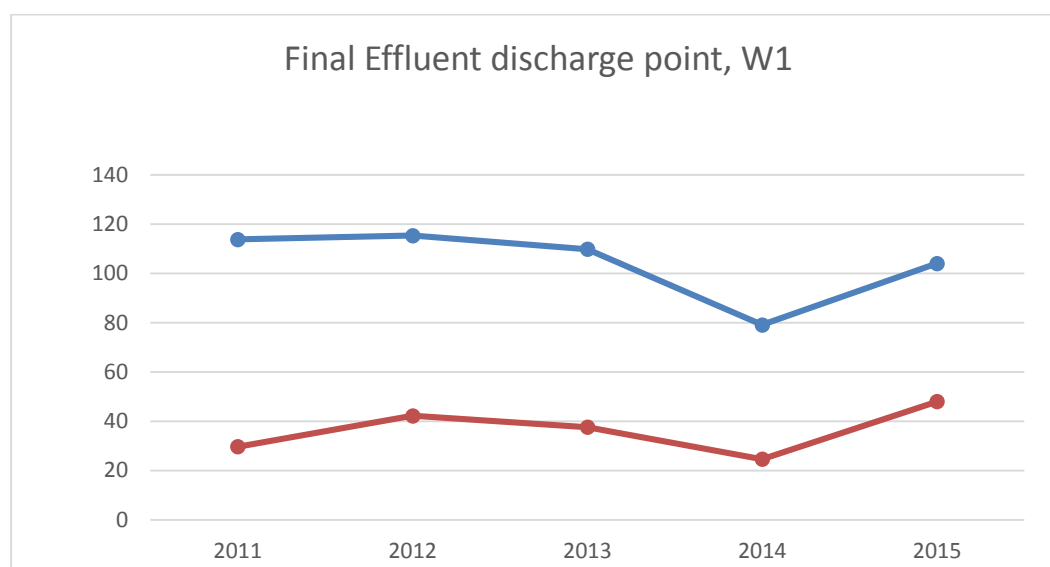


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Venting was higher in 2015 due to the ERU, energy recovery unit nearing capacity. Projects are in progress to improve efficiency of this unit, primarily a reduction in the residence time of the ERU. In addition a decision was made to swap the priority of the W714 reactor and Phoenix process to the ERU. The aim of this is to reduce the amount of hazardous solids, DPR, generated but it does result in W714 venting at a lower surge pressure resulting in increased venting.

Water

Site releases to the Cadoxton River are as follows



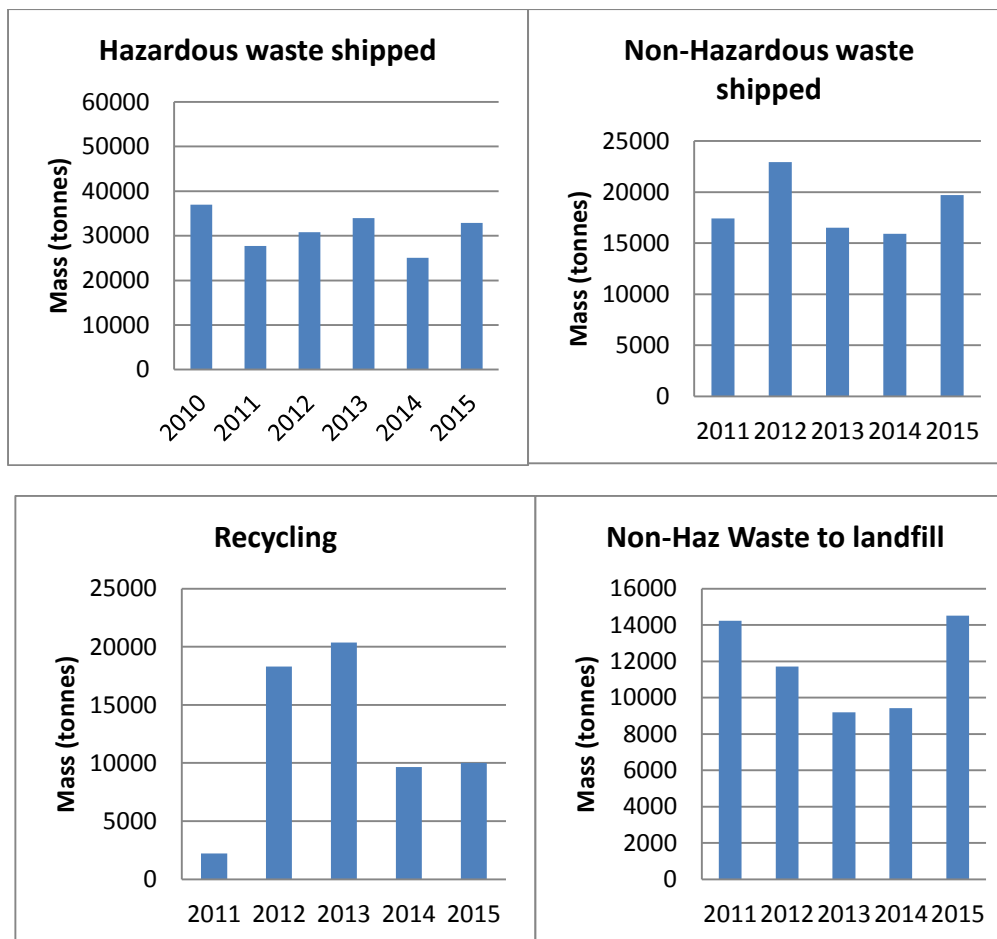
	Copper	Zinc
Year	Mass (Kg)	Mass (Kg)
2015	104	48

No significant changes observed from waste water treatment Cu and Zn discharges to river Cadoxton.

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Waste

Waste shipped from the site was as follows:



The increase in non-hazardous waste to landfill in 2015 was due to loss of a recovery outlet, Plasmet. Suitable alternative recovery outlets have not been identified for these materials.

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Environmental Management

Internal Audits

The rolling programme of internal environmental audits continued in 2015. Seven audits were held across the site and the scores achieved ranged from 84% to 90% with an average score of 87% which is comparable with the 2014 average of 87%. Corrective actions are entered into the site's action tracking database where necessary to ensure follow up.

Compliance

Due to a change in the corporate requirements for legal compliance evaluation frequency in 2015, no compliance evaluations were undertaken in 2015. The frequencies of evaluation were adjusted on the plan and the process will be continued in 2016 with a 6 year (increased from 5 yearly) rolling plan to evaluate compliance with all applicable EHS laws.

Corporate Responsible Care Audit

No corporate Responsible Care Audit was held in 2015. An audit for 2016 has already been completed and the provisional report indicates that there will be four findings requiring corrective actions that are related to environmental issues.

ISO14001

There was no BSi ISO14001 audit scheduled. Their next ISO14001 audit is due in May 2016.

Natural Resources Wales EPR Permit/OMA Audits

EPR compliance audits with NRW continued in 2015 with 3 audits being completed during the course of the year. A number of small improvement items were identified and corrective actions are now in place or in-progress. In-progress actions will continue to be reviewed during ongoing compliance audits.

Complaints and Communications

- There were 17 complaints to the Barry industrial complex helpline in 2015 of which 14 were odour complaints. None of the odour complaints were attributed to Dow Corning. There was one complaint attributed to Dow Corning which related to noise when an alarm from a fault at our CHP plant sounded. This was silenced and reset.
- The nature education centre continues to run school activities including a heavily supported series of activities for Science Week for which several schools attended.
- The site continues to support the issue of the community calendar which incorporates key safety information, in conjunction with the other sites in the Barry industrial complex.

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2015 Environmental Programme Improvement Items

The following table provides an update on the projects listed in the 2014 EMS review and indicates whether or not the targets were met in 2015.

Process Area	Improvement and Target	Progress and benefit
Site wide	Install overhead sewers by end Q1.	Target met – risk of ground pollution reduced. Project ended
2	Dragon hydrol fridge replacement to comply with R22 phase out by end Q1.	Target met – Fridges are installed and operational. Risk of causing atmospheric ozone depletion from the site is eliminated. Project ended, a separate project to remove equipment and associated equipment will be initiated.
5	Solids reduction project for waste water treatment (WWT). Propose practical measures for reducing solids carryover to WWT by end of 2015 to reduce risk of permit breach events in final effluent.	Target not met. Installation is not yet complete. This project will continue into 2016
5	Improve operation and on-line time of waste water treatment clarifiers to greater than 300 m ³ /hr 100 % of the time.	Target date not met. Lab trials for alternative polymer dosing completed. Plant trials delayed.
3	ERU Capacity – Progress project to ensure ERU capacity can be increased.	Target met. NRW approval to run trials down to 1.5 seconds residence time. Aspen model validated. Increased steam flow trials have begun which will enable higher vent feed rates. Demonstrated stable running at 1.7 seconds.
5	Scrubber operation. Review and update the design of the final plant scrubbers to ensure adequate capacity.	Target met. New design is complete and capital spend is authorised. Now targeting installation of new scrubbers in Summer 2016.
Site wide	CWW Bref. Understand new IED requirements expected to come into place in 2018, complete Gap analysis to understand potential issues.	Target met. Gap analysis complete. TOC and Cu measurements will be undertaken in 2016 with a view to reducing these in the final effluent.
1-5	Storage of waste solids Understand limitations of existing site storage and identify solutions so that solid waste storage is contained in BAT areas only.	Project ongoing. Initial studies indicate additional on-site storage will be required when the landfill storage area is closed.

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2016 Environmental Programme Improvement Items

The Environmental Improvement programs are overseen by the Environmental department, they consist of large projects that cross several operational groups such as the ERU improvement project and smaller area specific projects such as the Elastomers fibre pack reduction. All projects have an environmental benefit, for example they address risks identified in the sites aspects and impacts register, address legal requirements and minimize waste and energy etc

Key large project improvement items requiring more than 150 hours of effort are prioritized and managed through the site project portfolio process to ensure effort can be appropriately allocated to achieve desired goals. In this process we have environmental, utility, resource efficiency and other programme leaders. They meet frequently with project owners then present overall progress to site staff on a bimonthly basis. Any deviation from planned progress is reviewed and resource levels adjusted accordingly to make sure targets are met or realigned if business needs have changed. The smaller projects are managed by the local production teams but overseen by the environmental group to challenge targets and ensure timely progress

The following table details the main site improvement items for 2016 along with targets, there are many other items listed in area programmes that are not included here. They are available for review during site visits. Area programmes are posted on local area notice boards and updated quarterly to communicate progress to area teams as the year progresses.

Process Area	Improvement - 2016	Target
5	Solids reduction project for waste water treatment (WWT).	Install practical measures for reducing solids carryover to WWT by end of 2016 to reduce risk of permit breach events in final effluent.
5	Improve operation and on-line time of waste water treatment clarifiers to greater than 300 m3/hr 100 % of the time.	Continue with plant trials and implement findings
3	ERU Capacity – Progress project to ensure ERU capacity can be increased.	Continue trials of 1.7 seconds residence time and if approved by NRW implement as standard practice
5	Scrubber operation	Install new final plant scrubbers by end of Q1 2017 to ensure adequate vent treatment capacity.
Site wide	CWW Bref - TOC	Complete measurement phase of project for TOC by end of 2016.
Spec Chem	EBB Carry-over reduction to reduce waste and improve safety.	Install and commission upgrade project to eliminate carry-over of EBB from CHU. Demonstrate successful implementation by year end.
CISi	Mono-Di spec change to provide steam savings	Meet 2016 target spec demonstrating reduced steam usage per tonne of feed.
5	Eel screen	Install eel screen as required by regulatory requirements.

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Process Area	Improvement - 2016	Target
Elastomers	Reduce fibre pack waste	Eliminate use of fibre based packaging for deliveries to W306 GiC process, use returnable plastic kegs only by end of Q2 2016
Elastomers	Reduce raw material (catalyst) use in gum	By end of Q3 2016 realise raw material savings from reduced catalyst use and complete all required documentation updates.