

Environmental Report for 2018

Permit Site: FMC Agro Ltd, Pentre, Flintshire. CH5 2DH

Permit No. EPR/FP3031CW

Written By: Carl Rowe

Date: 25/01/2019

Requirement

Section 4.2.2 – A Report or reports on the performance of the activities over the previous year shall be submitted to Natural Resources Wales by 31st 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.

We recognise that many of our activities have an impact on the environment and we aim to conduct our business and operations to reflect best environmental practice.

FMC Agro Ltd is committed to the prevention of pollution, compliance with environmental legislation and the continual improvement of its environmental performance through the implementation of its Environmental Management System.

Production Values

In 2018, FMC Agro Limited manufactured 10,143,654 litres of product, compared to 10,320,472 litres in 2017, which is a 1.7 % decrease based on the previous year's results.

FMC Agro Ltd continues to conclude that our significant environmental aspects are the natural resources and energy we use, the chemicals we handle, use and store and finally the waste we generate.

This report focuses

- Energy & Natural Resources
- Chemical Handling, Storage and Use
- Waste and Natural Resources

Energy & Natural Resources

- In 2018 FMC Agro Limited used 380100 KWH of grid electricity for most site operations, this was further supplemented using diesel generator(s) which produced a further 274483.8 KWH, therefore a total of 654583.8 KWH of Electricity was used on site in 2018. Although more Grid Electricity was used in 2018 than 2017. This was due to the additional equipment now being introduced to site including Electric Fork Lift Trucks and Electric Powered pallet trucks, the use of fast acting roller doors to name but a few examples. Another part of the increase was due to new conversion data provided by the 2012 Guidelines to DEFRA/DECC's GHG Conversion factors for company reporting and digest of UK energy statistics 2011 (DUKES), which increased the value from 10 to 10.9 litres per KWH of Gas Oil

Improvements were still made to reduce the site's use of electricity in 2018 including installation of light sensors in infrequently visited rooms and continued to install several LED lights within the Factory including outdoor units.

Future sustainability of electrical usage on site continues to be a focus. In late 2016 FMC Agro Ltd (Formerly Headland Agrochemicals Ltd) applied for a significant quantity of CAPEX within the 2017 budget to remove the site diesel generators and replace with an electrical sub-station for its supply of further grid electricity. CAPEX was approved in 2017 and in late 2017 work started on construction of the new Electric Sub-Station on site. Delays have occurred with this project and it will now go live in the early part of 2019. With Grid Electricity becoming ever more greener and having lower carbon emissions this will enable the site to look to reduce carbon emissions rate by the removal of diesel generated electricity on site.

Additional Electricity usage will see an increase in coming years due to the introduction of Electric Fork Lift Trucks, additional plant equipment including building heating, so this is expected to have an increase in future reports.

- LPG Gas usage at the end of 2018 stood at 206026 KWH, LPG (Propane) was used on site only for the fuel for Fork Lift Truck movements.
- Compared with 207244 KWH LPG usage in 2016 this is a decrease by 0.6%

LPG Usage is only for the transportation requirements on site, in future years there will be a significant drop in usage of LPG as the site moves it's Fork Lift Truck Fleet from LPG to Electric. The site currently runs 6 electric Fork Lift Trucks and a further 2 electric powered pallet trucks on site. Work will evolve over the next few years to reduce number of Fork Lift Trucks by use of other mechanical means.

- In 2018 the site used 5587 cubic metres of town's water for the manufacture of its products including cleaning and domestic use.
- This is an increase of 860 cubic metres or 18.2% on 2017 data where 4727 cubic metres was recorded.

The largest part of the increase in water usage is due to the added amount of water now used for cleaning due to more stringent cross contamination aspects being

introduced to the manufacture of Plant based products. Other Engineering Improvements have been made in terms of installation of hard piped water lines around the factory thereby reducing flexible water hoses and connections which previously have led to several leaks on site. A CAPEX Project was also raised in 2018 to look to introduce hot water for washing filling lines in order to clean the equipment better thereby reducing cross contamination aspects and with an overall reduction of cold water washing for cleaning products. The system will be commissioned in the early part of 2019

- CO2 generation from Total Energy Usage in 2018 (inclusive of Office heating and Van use)

The CO2 emissions recorded by FMC Agro Limited at the end of 2018 stood at 271.929 tonnes of CO2. This compared to the 265.569 tonnes reported from 2017 usage. The site therefore seen an increase of 2.39%. The amount of CO2 kgs per litre produced was recorded in 2018 at 0.0252 and the result for 2017 stood at 0.0257.

On understanding of the increase, it was found that a large part of the increase was due to additional natural gas usage which is used for office heating and partial commissioning of the filling line washing process using hot(warm) water.

Chemical Handling, Storage and Use

Releases to Air

The site continues to use the environmental emission abatement equipment in the form of the nitric acid scrubber system (A006), for the manufacture of Manganese Dinitrate production from Mixer 3 in the New Formulation Department. The sampling of the scrubber was carried out by SOCOTEC (previously ESG) as previous years and was carried out on 25th April 2018. SOCOTEC continue to use the monitoring methods US EPA M7D for Nitric Acid Mist, BS EN 14792 for oxides of Nitrogen, BS EN 14790 for water and BS EN ISO16911-1 for Velocity

The sampling was carried out on 25th April 2018 when the production of Manganese Dinitrate (Headland Jett) in Mixer 3 was being carried out. The scrubber was fully operational and the results from the sampling were:

1.7 mg/m³ of Nitric Acid Mist, 14 mg/m³ of Oxides of Nitrogen and 2.0% Moisture. These results are well within the 200 mg/m³ of Oxides of Nitrogen Limits set out within the Site's Bespoke Environmental Permit FP3031CW

Further to the emission by abatement, Process Safety improvements have identified that each of the site's 4 mixer vessels requires additional vessel venting for and in early 2019 an environmental permit variation will be raised with NRW to implement these additional vents.

Loss of Containment/Flooding

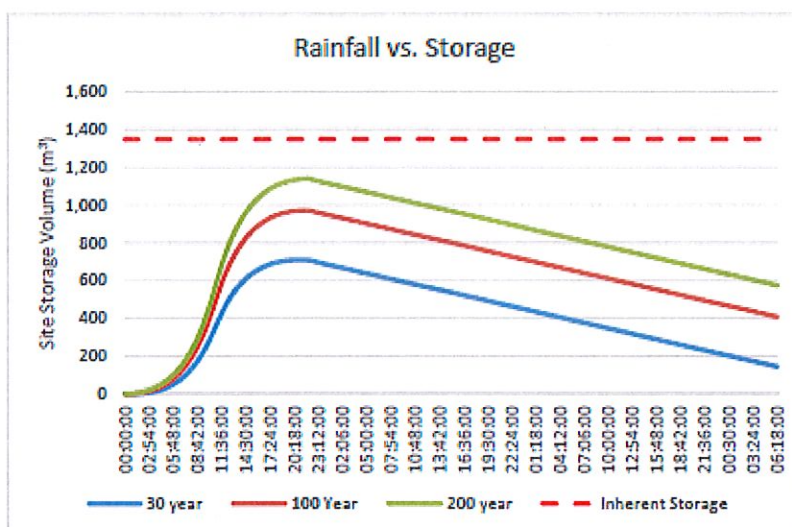
To prevent and reduce releases of dangerous for the environment material on and off site, ALL FMC Agro Ltd staff are made aware of the importance of protecting the

environment. The site continues investing in terms of CAPEX to reduce all aspects of loss of containment on site.

In 2018 CAPEX was approved to continue with tertiary bunding on site, in particular the area at the front of the building.

Flood and Spill mapping was also conducted in 2018 with the assistance of ERM. The flood mapping identified that based on analysis the site's storage volume is sufficient to contain all floodwater within the boundary, as long as the site drainage pump is fully operational throughout the rainfall.

Chart 4: Storm rainfall volume and the inherent storage of the site



Based on this analysis, the theoretical inherent site storage volume of 1,348m³ is sufficient to contain all floodwater within the site boundary, assuming that the single pumped outfall is operational throughout the modelled rainfall events.

Refresher and new training sessions were carried out by employees on Spill Kits and Spill Prevention with a full Chemical Spill Training Course including Practical element being carried out in 2018.

Project work on a new type of intermediate liquid transfer container started and continues in early 2019. The site is looking to reduce loss of containment from IBC's and is currently in the process of trialling and conducting a business finance case for this project. More work will continue on this in 2019 to improve reliability of equipment and reduce the potentials of LOC events at FMC Agro Ltd

In 2018 there were no recorded incidents of unpermitted release of dangerous for the environment materials off site.

Waste & Natural Resources

The nature of our work generates waste on site and at consumer sites, in 2018 work continued reducing the amount of packaging used and where possible to move to recyclable materials wherever possible.

- In 2018 the site generated and disposed of 1068 tonnes of waste material offsite.
- Recycling of site waste however continues to increase in 2018 with 363 tonnes of recyclable material transferred off site against 314 tonnes of recyclable material transferred off site in 2017, an increase of 15.6%.

The site's largest waste producer continues to be the micronutrient waste washings and the herbicide/pesticide waste washings with a combined total of 513 tonnes. 2018 saw a significant increase in Herbicide/Pesticide Washings due to more stringent cross contamination requirements between products accounted for an extra 94 tonnes of waste washings being created.

Trial work started in 2017 to look at methods to reduce the Waste Washings quantities using warm 10% sodium carbonate solution to reduce washing quantities, this project continued in early 2018, with reviewing the washing process with 40-50 degrees Celsius water. Unfortunately, the infrastructure to the plant was not currently in place to implement this project and a capital requirement for power and heated water was required to be in place for full implementation on the plant. This project was approved in early 2018 and the project to install a larger natural gas commercial boiler and hot water lines to all the filling lines on site in a project costing £65K. Project work estimates that this will significantly reduce the amount of water required and it is anticipated that waste washings will reduce by 50% or more.

Environmental Management Systems

The management system continues to be progressed and developed with improvements including revised flooding protection measures and waste controls and additional EHS resources.

The site's 2018 Environmental Key Target was to attain full ISO14001 accreditation, this started in late 2018 with the site choosing Bureau Veritas to undertake the accreditation process. Policy and Procedure changes continue to fall in line with the new ISO14001 standard and the first stage audit has been planned for early January with a 2nd stage planned for late April 2019. It has been decided that the site will no longer continue with the Green Dragon standard due to the appeal of the international standard for the current state of the site's business.

Document Approvals

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