

## Variation for Permit BJ7298IF

### Appendix C3 4a Monitoring of emissions

Process 5 – the manufacture of Ferrous chloride has fugitive emissions from the opening of the dissolver units. The steam created by the dissolving of millscale in Hydrochloric acid, is primarily made of water, however there is the potential for Hydrogen chloride gas to be present. However, from the operations of the sister process under permit EP3635TU, there is no requirement for the monitoring of emissions, therefore as Industrial Chemicals has successfully operated the permit EP3635TU for 9 years, without a fugitive emission issue, and the process that will be constructed at Wet Thurrock will be identical in construction & operation that the likelihood of this being required is none.

Process 6 – the manufacture of Ferric chloride, using the Ferrous chloride produced in process 5, will require continuous emission monitoring for chlorine during the manufacturing process. This levels emitted are low - as seen in the emissions reported at the sister site in Runcorn – hourly average tends to be 0.13mg/m<sup>3</sup> hourly average. It is presumed that as this will be an identical manufacturing process, that the emissions will also to an extent be identical. Industrial Chemicals would propose the installation of chlorine detectors, which read at such a low level. However, due to the nature and existing requirements of these types of monitors, none of them are currently Mcerts accredited. However, as some of the manufacturing companies are based within Europe, they have signed up to the TUV scheme that is the european equivalent of Mcerts. The Chlorine detectors that will be installed, will be continuous monitors and Industrial Chemicals will ensure that quarterly testing carried out by an external company e.g. Exova catalyst, who will use Mcerted staff, using Mcerted sampling equipment & Mcerted tests to determine & show how well the monitoring system works and also how close the results will be (as is the current case at the Runcorn Site). Industrial Chemicals propose, quarterly reporting to the Environment Agency for the levels of chlorine emitted along with the external monitoring reports to be submitted as well.

Process 7 – the cleaning of Sulphuric acid, using a glass evaporator. The acid comes to site at a weaker strength than what is suitable for use in process 4. The aim of the water evaporation is to increase the strength to a suitable level to enable the product to be used in process 4 without affecting product quality or causing issues within the production process. There is a steam release point, as with all evaporation units, but the design of this plant does not allow the release to atmosphere of sulphuric entrained steam. If there are to be any emissions from this process they would be fugitive and not constant.

Process 8 – the production of sodium silicate solution. From operating this process under an existing permit DP3637SG since 2005/6 (permit applied for/permit issued), but plant had been operational since 1984. It is known that there are no emissions to air during the process, except for the release of steam as this process is operated under pressure as a hydro-thermal process. There may be the potential for fugitive emissions, but it would just be steam.

Process 9 – the production of various types of aluminium chloride solutions. From operating permit DP3637SG, as with Process 8 there are no point source emissions to air. The steam from these reactors is pushed through a scrubber system to remove any trace of any unused hydrochloric acid. The scrubber water, once spent is then used as part of the dilution waters. If there are any emissions

to air from this process, then they are fugitive. In operating this process under the permit DP3637SG, there has never been any need, requirement or request to monitor the steam from this process.

Process 10 – the manufacture of Aluminium sulphate solution. As with process 8 & process 9, this product has been successfully manufactured under permits EP3630BB and subsequently UP3730WV and prior to 2005, operated since 1985 without any issues. Industrial Chemicals does once a year carry out external monitoring which has consistently proven that there is no sulphuric acid entrained in the steam produced as part of the reaction. Therefore it would be suggested that once a year monitoring be required. The test method used to determine if there were to be any sulphuric acid present in the steam is US EPA Method 8.

## Appendix C3 4b - Point Source Emissions

The table below details all current point source emission points with the relevant reference number and proposed emission points for the new processes, that are currently monitored & proposed to be monitored:-

Process number	Emission point Number & description	Gas monitored	Reportable via quarterly reporting
Process 3	A18 – Hydrogen Vent	Hydrogen	Not required – no limit
	A19 – Line 1 chlorine burner	Chlorine & chlorine dioxide	Yes
	A20 – Line 1 Chlorine scrubber*	Chlorine & chlorine dioxide	Yes
	A20 – Line 2 Chlorine scrubber*	Chlorine & chlorine dioxide	Yes
	A22 – Evaporator	Water as steam	Not required – no limit
	A23 – Line 2 chlorine burner	Chlorine & chlorine dioxide	Yes
Process 4	A17 – NOx from process	NOx	Yes
	A21 – NOx from boiler	NOx	No – Annual only
	A21 – CO from boiler	CO	No – Annual only
Process 5	A24 – Chlorine from dissolvers	Chlorine	No**
Process 6	A25 – chlorine from dissolving vessels	Chlorine	Yes***
Process 7	A26 – Evaporator	Water as steam	Not required – no limit
Process 8	A27 – Reactors	Steam & Hydrogen chloride	No****
Process 9	A28 - Reactors	Steam	No*****
Process 10	A29 - Reactor	Steam with the potential for Sulphuric acid in the steam	No*****
Process 11	A30 - Reactor	Steam	No*****

\*A20 – both scrubber lines for Line 1 & Line 2 expel the gases from the same stack. The gases are fed via separate lines, but use the same stack to emit the gas.

\*\* This is currently not done at the Runcorn facility (permit EP3635TU) as it is not possible as dissolvers are open top (not capped)

\*\*\* This is reportable at the Runcorn site annually, but would accept quarterly with a view of over 4 years to reduce the reporting requirements to annually once monitoring figures would be available.

\*\*\*\*This has never been reportable on Permit DP3637SG, as the reactors have been vented by a scrubber unit, but they were registered as emission points.

\*\*\*\*\*This has never been reportable on Permit DP3637SG, but they were registered as emission points.

\*\*\*\*\*This is checked annually at the Newcastle site (Permit UP3730WV), but not reportable.