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| **Non-Technical Summary** | |
| **Action area** | Production of Polyurethanes systems and binders using a prepolymer. |
| **Overview of Activities** | Solvated prepolymer manufacture, non-solvated prepolymer manufacture and polyol blends. |
| **Operating Techniques** | Prepolymer manufacture.  Reaction of a monomer with polyols with or without solvent presence.  Carried out under nitrogen to create an inert, dry atmosphere.  Exothermic reaction controlled by heating and cooling systems.  Reaction is monitored and samples taken for percentage NCO.  The product is packed down into 2.5L, 20L Drums, 200L drums and IBC’s. |
| **Raw Materials** | MDI Monomer added as a raw material and is delivered in drums in frozen form for product stability.  Polyols added as a raw material from Bulk tanks, IBC’s and drums.  Phosphoric acid as a raw material from 25L Carboy.  Ethyl acetate is added as raw material from the bulk tanks or drums and is highly flammable. |
| **Waste from the process** | Any washings are reused in the next batch. Any washing from a problematic batch or vessel conditioning washings (Ethyl acetate, prepolymer and product) are removed into steel drums for Hazardous waste disposal with a licenced waste disposal contractor.  The waste quantities produced are monitored and assessed for anomalies and efficiency of use.  There is minimal waste generated at <1%. |
| **Water use** | Water is provided to the site from the mains supply. Water is not used for processing or routine cleaning.  Water is used for Fire Prevention in the Sprinkler system.  Water is used as boiler feed water and undergoes chemical treatment and water softening as part of the boiler water treatment process to prevent scale build up, reduce oxygen and increase boiler system longevity.  Water is used as chiller water for cooling processes and undergoes chemical treatment as part of a chiller water treatment process to prevent scale build up and system corrosion.  Vessel wash water from non-routine specialist cleaning processes is collected for offsite disposal.  Water meters are going to be installed to allow for regular monitoring. |
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| **Point source emissions to air** | The drum heater oven is steam heated.  The drums are placed in a drum heater and as the product is warmed vapours are produced. The main emissions are MDI Monomers.  Ethyl Acetate when pumped in from drums is open to atmosphere with LEV extraction points.  Ethyl Acetate when filling packaging’s is open to atmosphere with LEV extraction points.  Tundish sample point could release vessel vapour consisting of phosphoric acid vapours.  Nitrogen is pumped into the vessel constantly and will release to atmosphere via the condenser and carbon filter.  NOX from the boiler process as the primary emission as well as SOX and dust from the boiler flue.  Diesel powered FLT operations will emit NOX, SOX and dusts.  Insignificant Nitrogen release from the process from the Nitrogen generator. |
| **Fugitive emissions to air** | LEV’s will cover any fugitive emissions at the charging stations. Spills will be minor and be cleaned up promptly. |
| **Monitoring of emissions to air** | The site operates one gas-oil fired boiler which provide steam to the process.  Performance monitoring (as opposed to compliance monitoring) of the emissions to atmosphere from the boilers is currently undertaken as part of an annual service by site-based technicians, to ensure that efficient operation of the plant continues.  Additional boiler monitoring using MCERTS equipment will be measured later in 2022 to benchmark compliance to the Medium Combustion Plant Directive (MCPD) and the associated monitoring schedule from 2030.  Impact assessment screening of the point source emissions to air and water has been undertaken using the EA H1 Environmental Impact Assessment software and guidance. All emission points are listed in the Emission Points document |
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| **Point source emissions to surface water** | Cooling water to recirculation for both the condenser and cooling coil in the vessel.  Non-routine high pressure water cleaning occurs annually and is collected for disposal. Steam is released from a changeover valve when the cycle changes from heating to cooling. This is similar to boiler blowdown water. Prior to steam being added the coil is emptied of chilled water. |
| **Fugitive emissions to surface water** | There are no emissions to water. |
| **Point source emissions to sewer** | There are no emissions to sewer. |
| **Monitoring of emissions to water** | Not required. |
| **Emissions to land** | No emissions to land from the installation. |

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| **Odour** | The manufacturing process is within a building. The LEV exhausts at the rear of the building. The Condenser exhausts to the tank farm bunding area. There are carbon filter drums before being discharged to air. There is no discernible odour. |
| **Noise & Vibration** | No noise complaints have been received. |
| **Energy** | The primary sources of energy used at the installation are electricity imported from the National Grid and Gas-Oil to power a boiler to generate process steam.  Half hourly meters are installed on the site across the site to record electricity usage. Gas-Oil consumption is measured through the purchase order system and visual tank levels. The readings and consumption levels are tracked, looking for anomalies and efficiency of use.  The boilers will fall under the Medium Combustion Plant Directive (MCPD) (2015/2193) as they are rated at 2.27MW and they will need to be registered by 1st January 2029 (and meet the MCPD Emission Limit Values by 1st January 2030) the application to this directive is included with this Environmental Permit application. |
| **Environmental Management system** | The installation operates under an environmental management third party certification scheme to ISO14001:2015.  The process is supported with a management consultant who carries out compliance audits. |
| **Environmental Risk Assessment** | An Environmental Risk Assessment has been undertaken as part of the installation permit. |
| **Incident Management** | Written procedures are in place to manage the identified risks, including procedures relating to spill response, emergency preparedness and response to major emergencies. The Site has a Major Incident Plan and a Fire Prevention Plan which outlines the processes to follow to ensure adequate systems, resources and training are in place to effectively prevent and minimise the impact of an incident. |