

The Former ChlorAlkali Plant



Former ChlorAlkali Plant, during its operation in 1979

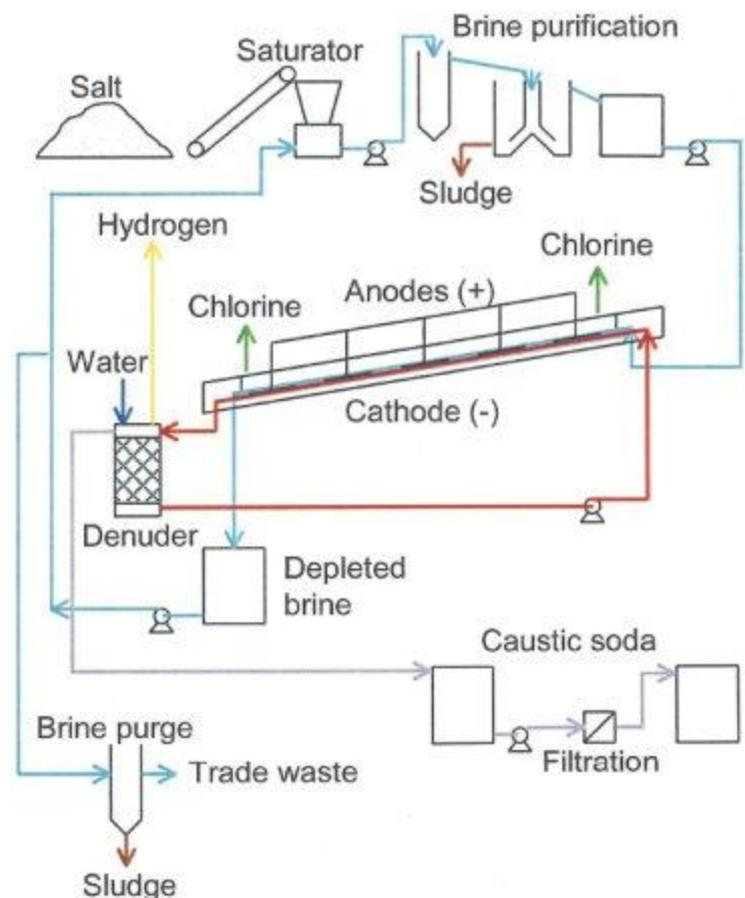
Plant Operation

Between 1944 and 2002 Orica operated a ChlorAlkali Plant at Botany Industrial Park (BIP). It was the second plant built in BIP. Unlike the current ChlorAlkali Plant which has operated at BIP since 2002 that uses an environmentally friendly membrane technology, the former plant used mercury cell technology to manufacture chlorine, caustic soda, hydrochloric acid, sodium hypochlorite and ferric chloride from brine solution (salt water).

Manufacturing Process

Chlorine and caustic soda are manufactured using an electrolysis process to separate sodium and chlorine (gas) from a brine solution. The brine solution was formed by dissolving sea salt (sodium chloride) in water, and then treated to remove impurities that could have adverse effects on the electrolytic process.

In the electrolytic cell an electrical current was passed through the concentrated brine solution. While the chlorine bubbled off, the sodium formed an amalgam with the mercury and flowed into another vessel. Water was added to the vessel to react with the sodium to form sodium hydroxide (caustic soda) and hydrogen. The mercury was then cooled and recirculated. The depleted brine was also recirculated to dissolve more salt.



Manufacturing process used at the former ChlorAlkali Plant



The chlorine gas was cooled and dried (to remove water vapour that could cause corrosion). The caustic soda was cooled and filtered to remove tiny (colloidal) droplets of mercury. The hydrogen gas was also cooled and compressed, which caused any mercury vapour in the hydrogen to condense and be collected.

Environmental standards, regulations and understanding during the ChlorAlkali Plant's early years of operation were not of the same as those we have today. In these early years, solutions containing mercury leaked from pipes into the environment.

Plant Demolition

After the new ChlorAlkali Plant was constructed and commissioned in 2002, the former ChlorAlkali Plant was decommissioned and then completely demolished in two stages between 2004 and 2007. Mercury-contaminated waste materials collected during the demolition were disposed of at a specially designed and licensed landfill 'cell' at Kemps Creek, as approved by the former NSW Department of Environment, Climate Change and Water (DECCW) (now the NSW EPA).