Negative effects on the environment

Melissa Oosthuizen

There are negative effects on the environment caused by the Chlor-alkali industry., there are environmental concerns that have made large impacts on the chlor-alkali industries? growth through-out the past twenty years and will also affect the future growth of the industry.

Chlorine bleaching of wood pulp as well as dioxin emissions to the environment

The demand for chlorine decreased due to the existence of dioxin at parts per trillion level in paper and paper based produce and chlorinated organic in pulp mill effluents. Chlorine utilization in the paper and pulp industry was lowered from 15% in 1987 to 7% in 1998. The Environmental protection agency publicized the ? Cluster Rules? in the late 1998, authorizing the utilization of elemental chlorine-free bleaching. These rules that they put into place in April 2001 decreased the chlorine usage in the paper and pulp bleaching operations in favour of sodium chlorate, hydrogen oxygen and peroxide.

Mercury emissions

Between the years 1930 and 1960, a large amount of mercury was disposed of in Minamata Bay, Japan. Masses ? of people that lived in or around that area were severely affected and developed methylmercury poisoning due to the consumption of the fish that lived it the contaminated water and therefore were themselves contaminated. The sufferers suffered with intense neurological damage, which is nw know as Minamata Disease. Over 900 people died from this cause. As of then there was a drastic move away from

the mercury-cell technology to the diaphragm and ion-exchange-membrane-cell technologies. Currently only 35% of the world capacity of chlorine is produced by the use of the mercury-cell. No new mercury-cell plants will be erected and the already existing plants are operating at a lower than maximum mercury loss rate requirement of 1. 9grams per year per metric ton of chlorine.

Asbestos

Asbestos is used in the diaphragm cell as a separator material. Asbestos is an extremely poisonous material, causing lung cancer and diseases, asbestosis and mesothelioma. When a bill was set into place to ban the use of asbestos Chlor-Alkali plants were excused because there were few cost effective alternatives for this technology. The EPA revoked this exemption if there were any unreasonable risks to the environment or health found. The industry has avoided these risks by means of surveillance and monitoring programs for disease relating to Asbestos and with the use of proper safety equipment and filtering systems during the times of unavoidable Asbestos exposure. In most countries the employment of Asbestos in diaphragm cells have been completely banned.

Polyvinyl chloride plastic

Chlorine production was frenzied in vinyl chloride monomer (VCM) production to please the increasing demand of polyvinyl chloride (PVC). Through 2010 the demand for VCM is estimated to grow annually due to the increased need for PVC in the manufacturing, packaging and other industries. There are two huge environmental issues regarding PVC, which include their inability to biodegrade and their generation of dioxins when they are burned

for controlled waste recycling. Hydrochloric acid that forms during the thermal decomposition of PVC is yet another issue that many environmentalists are strongly appealing to for the replacement of chlorine-free products for PVC products.

Ozone layer depletion

Chlorinated fluorocarbons (CFC? s), carbon tetrachloride (CCl4) and 1, 1, 1-trichloroethanes was completely banned in 1997, according to the Montreal Accord, because of their involvement to the ozone layers depletion. Chlorinated ethanes and methanes are under great criticism because of the environmental and occupational concerns connected with them. However, their production will continue due to their use in the producing of HCFC-22. This HCFC-22 is much less harmful towards the ozone depletion in comparison to CFC? s and is an intermediate in the making of tetrafluoroethylene for the use in the manufacturing of Teflon and other fluoro polymers. HCFC? s are at this moment substituted for the CFC? s until they are phased out and removed. HFC? s containing no chlorine at all are not subjected to this restriction.

South African Companies that form part of the Chlor-Alkali Industry

- NCP Chlorcnem is a company that started as a bulk chlorine provider in 1935 and is situated in Chloorkop. NCP Chlorchem is also a provider of specialized water treatment chemicals. The Speciality Devision of NCP Chlorchem has existed for numerous years. Products like ferric chloride were produced as far back as 1984, although it was the purchase of Ultrafloc in 1986 that gave NCP Chlorchem a push forward into the portable water care treatment segment.

- Walvis Bay Salt Refiners is a major provider of industrial salt to the chlor-alkali industry and also supplies salt for the southern African Market.