250 years of improving lives with chlor-alkali chemistry

This year marks the 250th anniversary of Karl Wilhelm Scheele's discovery of chlorine: a significant milestone in the history of chemistry.

Together with its co-products sodium/potassium hydroxide (caustic soda/ potash) and hydrogen (collectively known as chlor-alkali), this basic chemistry is the foundation of a modern industry, shaping products and technologies that have contributed to public health, industrial growth, and sustainability.

CHLORINE 250 YEARS OF IMPROVING LIVES WITH CHLOR-ALKALI CHEMISTRY

The World Chlorine Council is leading the way

Who is working to make these advancements a reality? The World Chlorine Council (WCC) and its regional membership. Founded in the early 1990s by the US and Europe associations, WCC is a global chlor-alkali network bringing together six regional associations, all founded in just over 100 years.

Here is a short history of this fascinating chemistry!

18th century

Chlorine is discovered
Karl Wilhelm Scheele discovers chlorine

- Electrolysis of salt water to produce chlorine and sodium hydroxide (caustic soda) is demonstrated
- First small-scale use in bleach, soap and textiles

19th century

Large-scale alkali production processes are developed

- New processes enable large-scale production of alkali for glass, textiles and soap and then for the chemical industry
- Further upscaling during the century for even more bleach, soaps and detergents

19th-20th century

Chlorine plays a key role in water sanitation
revolutionizing public health through the reduction of waterborne diseases

- Chlorine first used to treat the water supply of a town (Maidstone, England) [1897]
- Chlorine first used to treat the water supply of a city (Jersey City, USA) [1909]
- First regular treatment of swimming pool water (Brown University, Rhode Island) [1910]

20th century

Innovative applications for chlor-alkali expand

- Polyvinyl chloride (PVC) developed for pipes, construction materials, packaging, and even medical devices such as blood bags
- Strong synthetic fibres such as nylon and Kevlar®
- Polyurethane for insulation, coatings, and foams
- Pharmaceuticals, where chlorine is used in the production of over 85% of modern medicines such as antibiotics, painkillers and antiseptics

21st century

Chlor-alkali is a major contributor to sustainable solutions

- Chlor-alkali materials help make solar panels, wind turbines, and electric vehicle batteries
- Chlorine continues to play a vital role in water sanitation and particularly in developing regions where access to clean water is limited, to help meet global sustainable development goals
- Advances in technology enable even more recycling of PVC
- Hydrogen, one of the key products generated during the chlor-alkali process, gains importance as a clean energy carrier

SAFETY
Holding regular global safety workshops since 2002 to promote the continuous improvement of safety practices worldwide in the production, transportation and use of chlor-alkali

COMMUNICATION
Providing resources to help communities safely use bleach to battle hepatitis A, norovirus, COVID-19, dengue fever and Monkey Pox.

ENGAGEMENT
Promoting safe clean drinking water at Water Forums in India in 2015, South Africa in 2019 and Latin America in 2023.

COMMUNICATION
Showing the benefits of chlor-alkali with chlorine and caustic soda 'trees' via the worldchlorine.org website and @ChlorineWorld LinkedIn and X accounts.

SUSTAINABILITY
Participating in World Summits and UN Conferences on Sustainable Development.

ENGAGEMENT
Contributing to global guidance on Waste and High-Production Volume chemicals.

COMMUNICATION
Participating in UN Water Conferences in 2023 and supporting annual World Water and World Oceans Days.

ENGAGEMENT
Supporting the UNEP Global Mercury Partnership and Minamata Conventions since 2016 to phase out mercury in chlor-alkali by 2025.

SAFETY
Sharing of safety incidents and best practice guidance at every WCC meeting and in newsletters.

SUSTAINABILITY
Communicating on how chlor-alkali helps the UN Millennium Development Goals and UN Sustainable Development Goals.

ENGAGEMENT
Collaborating with global organizations such as the Strategic Approach to International Chemicals Management (SAICM), World Health Organization (WHO) and Organisation for Economic Cooperation and Development (OECD).

COMMUNICATION
Contributing to the Working Groups of Stockholm Convention on Persistent Organic Pollutants (POPs).

SUSTAINABILITY
Publishing a Sustainability Report since 2002.