Chlorine for safe water

PUBLIC INFORMATION

October 2023

A proven life saver through powerful disinfection

Chlorine was first used in drinking water in the late 19th century to control the spread of water-borne diseases such as typhoid, cholera, dysentery and gastroenteritis, which have collectively killed more people than all the wars in history. Fighting these diseases remains a vital and ongoing process.

An ongoing health battle

The World Health Organization (WHO) estimates that each year, more than one million people still die as a direct result of drinking unsafe water, of which the majority from diarrheal diseases. Globally today, two billion people lack access to safely managed drinking water services (joint Report WHO/ UNICEF Joint Monitoring Programme 2023). At the 2002 World Summit on Sustainable development, by 2015 the Global Community committed to halve the proportion of people without access to safe and healthy drinking water. Clean water is also one of the UN global post-2015 Sustainable Development Goals.

Water chlorination and the use of sustainable PVC piping for clean water transport can play a key role in addressing the challenges with access to safe and clean drinking water.

Powerful disinfection necessary

Chlorine is a powerful disinfection agent when carefully used either on its own or as sodium hypochlorite (also known as 'bleach'). Added to water in small quantities, it quickly kills bacteria and other micro-organisms, by breaking down their cell walls.

Chlorine has a major advantage as it can ensure clean water right up to the tap, whereas other disinfectants only have temporary or local effects. Chlorine can also help to remove unwelcome water taste and odour, can control the growth of slime and algae in pipes and storage tanks and help to remove unwanted nitrogen compounds from water.

Proven life saver

Many events testify to the importance of chlorine in water purification:

- In the US, annual deaths from cholera totalled 25,000 in 1900. By 1960, this figure had fallen to fewer than 20 thanks in part to the use of chlorinated disinfectants;
- In 1986, 4,000 people in Tenerife were hospitalised due to water contamination which followed the temporary withdrawal of chlorine for disinfection.
- In 1991, a misinterpretation of US law resulted in a voluntary suspension by Peru's government of chlorination of water supplies. The resulting cholera epidemic spread to neighbouring countries causing 1,000,000 cases of cholera and more than 10,000 deaths;
- Recent studies of the 2014-2017 Flint water crisis suggest a link between an outbreak in fatal Legionnaires' disease and a drop in chlorine levels in the area's water supply.
- Even today, the world is fighting killers like cholera in many global regions.

Poor living conditions and lack of safe drinking water can easily lead to rapid spread of dangerous bacteria

Finding potable water can imply a daily search, miles away from home

The African cholera fight

The lack of access to potable water is the single most important cause of recurring outbreaks of cholera in many countries. The United Nations combat this disease by funding projects to distribute chlorinated water to local, rural peoples.

Cholera symptoms can appear quickly after a person has been infected with the bacteria. A toxin is then produced that causes continuous watery diarrhoea; a condition that can quickly lead to severe dehydration of the body and death if treatment is not administered promptly.

For example, in February 2012, when efforts to combat the spread of cholera in the Democratic Republic of Congo (DRC) remained underfunded, the disease began to spreading further (February 2012). Over the following twelve months, the UN-managed Central Emergency Response Fund (CERF) allocated more than 13 million US dollars (more than 9 million euro) to support the fight against cholera, according to the UN Office for the Coordination of Humanitarian Affairs (OCHA) in Geneva.

The UN World Health Organization (WHO) confirmed that cholera had spread to the Bas-Congo province in the east, which meant that nine of the country's 11 provinces had been affected by the disease. The UN and other humanitarian agencies have been working with the Congolese Government since to combat the disease.

The response has included establishing cholera treatment centres, providing **water chlorination points** and refurbishing water points, conducting awareness campaigns using the media, training of medical staff, and disinfecting boats. (Source: World Health Organization Press Release, 6 March 2012).

It is not only in Africa where chlorine disinfectants were used. In 2012, following Tropical Storm Isaac, organisations provided chlorinators and chlorine tablets to Haiti to prevent the spread of cholera.

Providing quality drinking water is a major challenge in many regions of the world

Also needed in Europe

Today, more than 90% of Western Europe's drinking water is chlorinated. A range of chlorine compounds, including ferric chloride and hydrochloric acid, are also used to purify waste water and sewage.

In the home, chlorine-based products are also used in laundry bleach, dishwasher detergents and all-purpose disinfectants to kill common germs (including *Staphylococcus*, *Salmonella*, *Pseudomonas* and even the fugus responsible for athlete's foot!).

Swimming remains a very popular, healthy pastime thanks in part to the benefits of chlorine. Disinfectants based on this element keep swimming pool water safe by killing a range of dangerous microbes that could otherwise threaten health.

Chlorinated disinfectants were also vital during the Covid-19 pandemic to protect communities from the harmful virus.

Much more about chlorine on www.eurochlor.org.

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