Get to know the facts about Chlorine

What is chlorine?

Chlorine is a naturally occurring chemical element, which exists primarily in compounds, bound to other types of atoms such as sodium. Chlorine bonds easily with other elements, resulting in more than 2,000 chlorine-based naturally occurring compounds.

How is it made?

The cell room at the Chemtrade North Vancouver Facility, where chlorine is produced

To manufacture chlorine, you only need three simple ingredients: water, salt, and electricity.

When salt (sodium chloride) is dissolved in water, it creates brine. Electricity is then applied to the mix in specially designed tanks, or cells, that contain dozens of plastic membranes, creating compartments which allow the charged brine mix to separate into three components: chlorine; caustic soda (sodium hydroxide); and hydrogen. This process is known as electrochemistry, and generates virtually no waste, greenhouse gases or pollutants.

What does chlorine look and smell like?

At room temperature and normal atmospheric pressure, chlorine is a green/yellow gas, that has a strong bleach or ammonia smell. It is two and a half times heavier than air, so will settle at lower levels. If the temperature is below −34 °C (−29 °F) or if two times the normal atmospheric pressure is applied, chlorine becomes a dark brown/yellow liquid with no odour.

What is chlorine used for?

Since chlorine kills bacteria, microbes, viruses and sanitizes, one of the most common uses is as a disinfectant and treating drinking water. In 1918, the US Department of Treasury called for all drinking water sources to be treated with chlorine. Following this, deaths related to water-born illness dropped dramatically. Chlorine remains one of the most common and effective ways to treat municipal drinking water.

Chlorine is also used to make hundreds of consumer products from paints, to cleaners, and textiles. Another common product which is produced using chlorine is PVC, a versatile plastic material used in everything from window frames to car interiors, plumping and water pipes, medical supplies. and vinyl flooring.

Chemtrade produces up to 70% of the chlorine used for treating municipal water supplies in western Canada, 60% of the chlorine used in the western United States, and 40% of all chlorine produced in Canada.

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What are the risks?

Chemtrade's first priority in all operations is safety. The safety of our employees, the community, and the environment. At every step, from production through to delivery to the customer, we ensure that the chlorine that we produce is being safely manufactured, stored, and shipped. All of our sites incorporate sensors that can detect chlorine as low as one part per million, and our employees regularly inspect the facility to ensure everything, including railcars and transport trailers for shipping, are in proper working order. Employees also participate in emergency response drills, so in the unlikely event of a spill or leak, they are trained in how to respond.

In the unlikely event there were to be a spill or leak, the facilities are equipped with emergency shut offs which would limit the amount of liquid or gas which could escape. If there were to be a spill of liquid chlorine, it would quickly evaporate into gas, provided the ambient air temperature is above −34 °C (−29 °F) and atmospheric pressure is normal. The gas would then settle into lower levels of the atmosphere before dissipating.

Levels at or less that one part per million (the level that the site sensors will detect) can be tolerated with no ill effect. At higher levels, chlorine can irritate the eyes and respiratory system. Exposure to significantly higher concentrations (more than one part per thousand) can result in serious health implications. The risk of being exposed to levels of this concentration is extremely unlikely.

One of the many rail loading areas at Chemtrade facilities. All rail cars are checked upon arrival at site, and again during and after loading to ensure they are fully functioning and secure.

The Chemtrade facility in North Vancouver, BC produces the chlorine used to provide up to 70% of communities in Western Canada, and 60% of communities in the Western United States with safe drinking water.