

# Does Salt and Water make a Good Cleaner?



Educational  
Bulletin

Salt and Water

The arrival of water chlorine generators utilizing electrolytic cells in the recreational water industry has been the precursor to an emerging technology in the field of janitorial services. In fact, we are seeing more and more devices powered by water and salt on the market that promise to generate a cleaner. How does this technology work, and is it economical?



## | How does it work?

When exposed to an electric current in an electrolytic cell, an aqueous salt solution can generate sodium hypochlorite (bleach) and sodium hydroxide (basic compound). These two compounds are the active ingredients in the cleaning solution generated. Although these systems have real benefits—such as creating a captive system, eliminating the need to handle concentrated chemicals, reducing transportation and storage requirements, and allowing for greater precision when diluting the cleaning solution—they also have certain drawbacks that are rarely mentioned.

## | What are the drawbacks?

This type of device is expensive and installing it requires a considerable amount of space. It is also an incomplete cleaning solution. Because it does not contain sequestrants (mineral-control agents) or surfactants (surface-wetting agents), the cleaner is not optimized and dirt/minerals will soon accumulate.



Depending on the technology used, either gaseous hydrogen will form, requiring a vent and explosive gas management, or highly acidic water (pH <2) will be generated, which cannot be poured down the drain (environment) without pre-treatment.

This highly acidic water solution contains muriatic acid, a dissolved gas that is highly corrosive. Corrosion deterioration to the device's immediate surroundings should be expected.

Not only is this device expensive, but because it is not mobile, several devices will have to be installed to optimize staff work time.

The amount of water released during the hydrolysis process varies between 50 and 90% depending on the technology used. This makes it a less than optimal choice when looking for an environmentally responsible solution.



## | How much does it cost?

This type of device costs more than \$25,000 and will require about \$6,000 in parts (filters and membranes) every 5 years. The estimated cost of the salt used over 5 years is \$25,000. This adds up to an investment of \$56,000 per unit to generate 1,000,000 L of cleaning solution.

Keep in mind that these devices generate two chemical compounds, bleach and sodium hydroxide. How much would it cost to produce this mix? Since these two compounds are low-cost basic chemical ingredients, it would cost \$10,000 to produce exactly the same number of litres in the same concentration, without wasting even one litre of drinking water. The cost and performance of cleaning products depend on additives such as surfactants and sequestrants, as well as the research time needed to optimize cleaners for the type of dirt that has to be eliminated.

