

By Joanne Funyak, PPG Industries, Inc.

CALCIUM HYPOCHLORITE

FROM DRINKING WATER TO SWIMMING POOLS

Drinking water fundamentals can be applied to commercial pools to treat bacteria, viruses and microbes.

It was more than 90 years ago that Booton, N.J., became the first utility in the nation to use chlorine to purify water. Subsequently the use of chlorinated water became the norm across the country and safe drinking water is something we all take for granted. In that respect, how many people realize how water chlorination affects other aspects of everyday life? To many people, a nice dip in the pool provides recreation and relaxation, and they don't need to think about the effort that went into the treatment and sanitation that made that pool a safe and clean place for fun. That is left to the professionals and drinking water fundamentals that can be applied to pool water care.

The pool and spa industry has spent decades perfecting the process of water chlorination using different forms of chlorine and a variety of delivery systems. Chlorine gas and liquid bleach had been the standard in commercial pool chlorination. However, two major concerns have pushed the commercial pool industry to look for

alternative methods: the concern for the public, for pools and waterparks to remain free from bacteria such as *E. coli* and other pathogens, and chemical storage and handling concerns for both the public and pool employees. These become even bigger concerns as teenagers and seasonal help often have the responsibility for administering the chlorination system.

In response to these concerns, the commercial pool industry is returning to the old reliable form of chlorine, calcium hypochlorite (cal hypo) as their system for water chlorination. It is a dry form of chlorine that is safer to handle.

Chlorine gas requires separate vented rooms and personnel need to be trained and wear breathing apparatus when servicing or changing cylinders.

When handling liquid bleach, personnel also must wear the proper protective clothing. Bleach should not be stored near any acid products. Numerous incidents have been reported where acid and bleach were mixed, producing chlorine gas resulting in temporary evacuation of aquatic facilities.

There are many chemical advantages to cal hypo. Cal hypo contains approximately 65 percent chlorine as compared to the 12 percent that is typical in liquid bleach. Bleach breaks down over time, losing its strength and efficacy as well as adding to the total dissolved solids in the pool. Cal

hypo has a neutral pH that can reduce the need for auxiliary treatment chemicals. When mixed with water, cal hypo has a pH of 10.8, making it easier to maintain the optimum pool water pH of 7.2—7.6 when compared to pH extremes of other forms of chlorine.

The calcium contained in the cal hypo is less corrosive than other forms of chlorine to pool components such as concrete, plaster and piping. Bleach can corrode pipes and electronics in the filter room. Feed pumps can lose their prime due to oxygen forming as the bleach decomposes, interrupting reliable feed of chlorine to the pool. Chlorine gas can corrode supply line fittings, which then can clog the tiny openings in the regulators and eductors used to control its addition.

By combining the popularity of cal hypo in a convenient 3-inch tablet form with a patented erosion feeder, cal hypo has made a dramatic comeback. Individual feeders are capable of delivering chlorine with the versatility of handling wading and zero-depth pools to approximately one-million-gallon wave pools and two-million-gallon standard pools. Tablet erosion systems are designed to provide even chlorine distribution. A sidestream of circulating water is directed into the chlorinator to erode the cal hypo tablet as it passes over the sieve plate and discharges through the outlet. The amount of chlorination is controlled by the water flow. Since the chlorine solution produced

in the sidestream is only approximately 200 to 400 parts per million (ppm) chlorine, it will produce an overall concentration of one to three ppm, preventing severe over-chlorination.

From drinking water to food and beverage processing to commercial swimming pools, cal hypo is becoming a preferred alternative to chlorine gas and bleach. Some erosion tablet feeders not only carry the NSF 50 listing for pools but they also have NSF 61 certification for potable water and are dependable enough to be used nationwide in a wide variety of other applications ranging from wastewater treatment to food processing. Pool managers, waterpark personnel and municipalities alike are all finding that cal hypo tablet technology makes a difference. Not only do they have a consistent delivery of chlorine but they also are seeing a reduction in down time for maintenance and repairs, and fewer injuries and accidents related to other chlorine delivery methods. And all of these are providing safe, clean, clear water for their customers to enjoy. **WQP**

About the Author

Joanne Funyak is the Accu-Tab marketing manager for PPG Industries, Inc., Pittsburgh. She can be reached at jfunyak@ppg.com.

For more information on this subject, write in 1011 on the reader service card.

Product at Work

The PowerPac AT chlorination unit incorporating the Accu-Tab chlorinator and tablets provides a better alternative to liquid gas and chlorine bleach for commercial pool and spa installations. Its compact size makes conversion simple and installation easy.



What to Test With in Residential Pools By Jay Anand, Industrial Test Systems, Inc.

Making sure that your water is safe to swim in is the concern of every pool owner nationwide. So, what should you use in order to gain this security? With the wide variety of tests that are available in today's market, choosing the test that is right for your customer is just as important as the safety of his water. Although the choices are many, only a few test kits ideally are suited for the average pool owner.

Liquid test kits have been around for a long time and are inexpensive and easy to find. These kits involve taking a sample of water and adding phenol red, which indicates pH levels, and OTO, which indicates chlorine levels. Although these test kits appear to be easy to operate, they are plagued with problems. First, there is no way to guarantee that every drop you add is exactly the same. This can translate into incorrect results. Second, liquid reagents in test kits often can go bad if exposed to heat for a period of time. Again, this can translate into unreliable results. Third, the reagent OTO has been classified as a suspected carcinogen. If the underlying goal of testing the pool is safety, you do not want to use a test that can be harmful. Lastly, phenol red often can provide a false low reading when chlorine levels are above those normally found in pool water. Unless you are attentive to detail and have access to a controlled environment,

liquid test kits are not what you should use. A more ideal choice for the pool owner is to test the water with a multi-parameter test strip.

Test strips are very common. They are inexpensive, quick and, when used properly, very reliable. Although test strips cost a little more than liquid test kits, the benefits offset the price differences. First, test strips have all of the chemical reagents necessary pre-measured on the test strip, providing consistent readings every time. Second, test strips give reliable results so you can be sure that the customer's pool investment is protected and its users are protected against harmful bacteria, algae and other undesirable conditions. Third, test strips can offer more results than liquid test kits in a shorter time—after all, we all want to enjoy the pool and not spend our days testing it. Fourth, test strips have a long shelf life—an average bottle lasts two years. Lastly, test strips are safe. Manufacturers of test strips have taken exhaustive measures to ensure that their products contain no hazardous reagents.

A few tips when using test strips: Always follow the directions closely—different manufacturers have different test procedures. Always place the cap securely on the bottle when not in use—excessive moisture in the bottle can cause test strips to pre-

maturely expire. And always make sure to be in a well-lit area when matching your results—direct sunlight might be a little too much light, but shade is okay. Avoid trying to match colors at night unless you have a well-lit area.

The goal of having a swimming pool is for the customer and his family to enjoy it. Making sure that it is safe should be easy, accurate and as fast as possible.

WQP

About the Author

Jay Anand is the marketing manager for Industrial Test Systems, Inc.

For more information on this subject, write in 1016 on the reader service card.

Although the choices are many, only a few test kits ideally are suited for the average pool owner.