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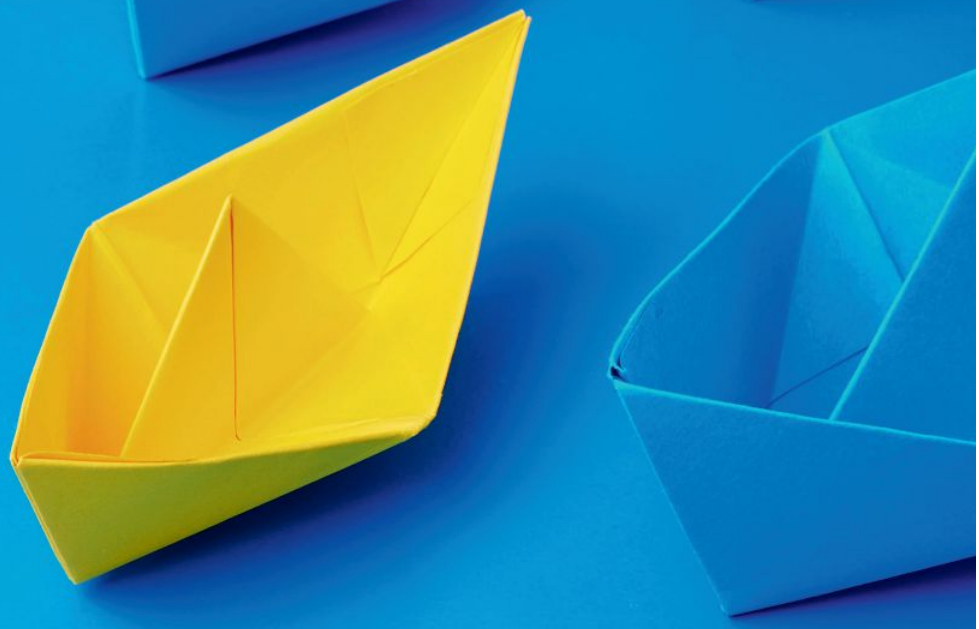

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PANDEMIC-RELATED CHLORINE SHORTAGES

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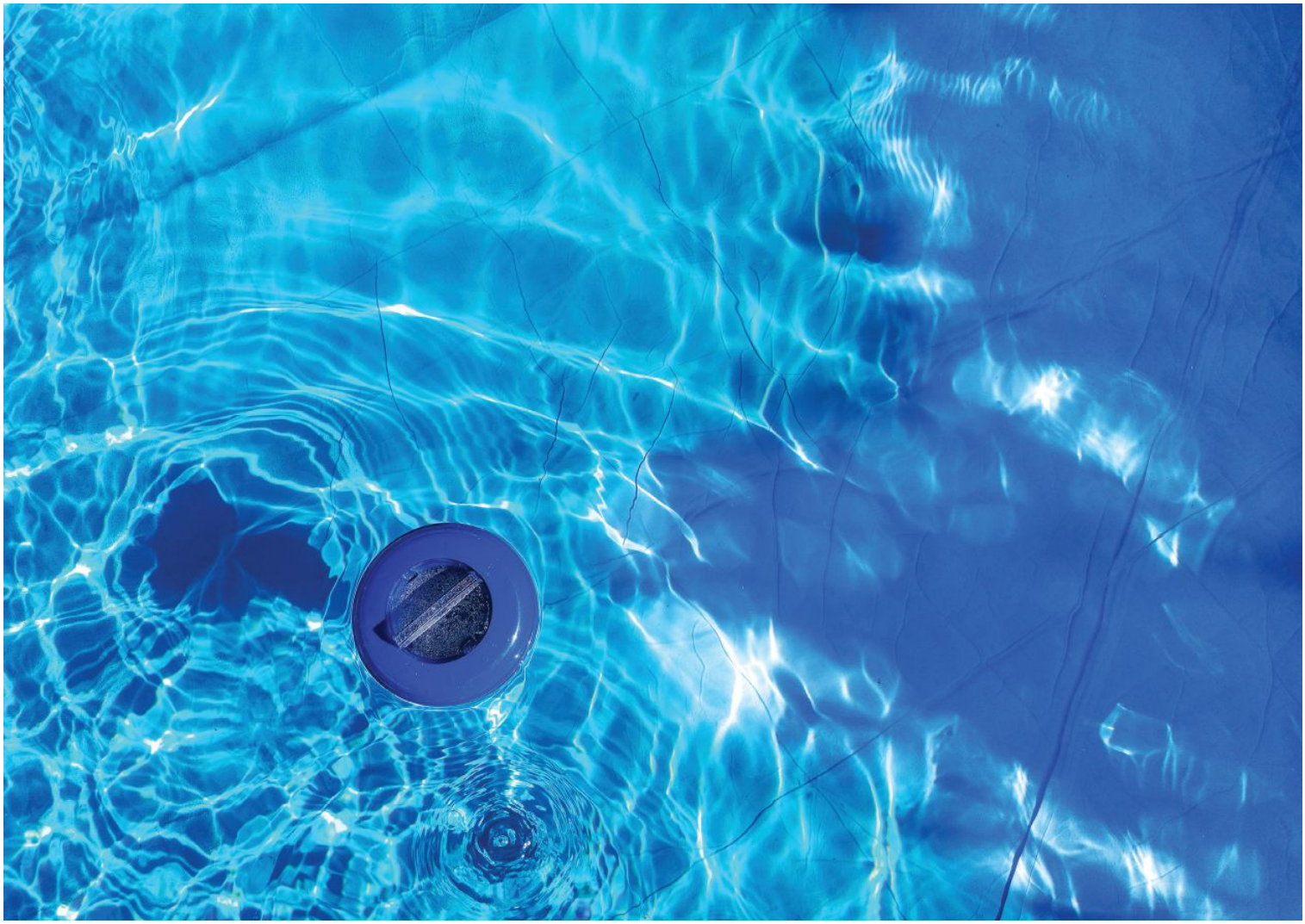

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Pandemic-Related Chlorine Shortages

SHORT-, MID-, AND LONG-TERM PROBLEMS AND SOLUTIONS

BY ALVARO MENDOZA

Most of the major news outlets have been busy reporting dire chlorine shortages and price increases for the summer and fall of 2021 and beyond. These include reports of up to 35 percent price increases, anti-hoarding quantity restrictions by major retailers and pool stores, and long-term market

corrections to what was normally a very affordable commodity.

There has been much speculation as to the source of these shortages, the validity, and the possible solutions that might exist.

First, contrary to all the conspiracy theories, the chlorine shortage is very real as are the price increases and continued pricing pressures.

As per the cause, there were actually several contributing factors to this situation, and it has created a perfect storm of normally unrelated events.

- Weather-related events: Two events had the greatest impact on the current shortages. First, in August 2020 Hurricane Laura destroyed a major chemical plant in Louisiana. This plant produced a significant amount of the residential chemicals for the U.S. market. Then in the winter of 2020, an extensive freeze in Texas and Louisiana reportedly destroyed and triggered the renovation of tens of thousands of pool equipment systems, straining an already precarious situation.
- Pandemic-related events: As a large portion of the U.S. worked from home, some homeowners sitting on savings from canceled vacations opted for major upgrades of their backyards, and pool construction and renovation activity peaked. The residential pool market was NOT one of the industries that suffered during the pandemic. These new and upgraded pools required more and larger treatment systems, further sapping supplies, while output had been cut from commercial pool closures, plant closings, employee furloughs, etc.
- Raw materials and import-related events: As California closed ports and container ships were unable to unload, the flow of imports slowed. Shipping vessels and even shipping containers became scarcer, further slowing the flow of finished goods and raw materials. It seemed that only U.S.-based chlorine manufacturers were able to avoid the deepest disruptions.

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Alvaro Mendoza is President of Commercial Energy Specialists (CES). CES helps you take total control of your pool operation for affordable crystal-clear water with guaranteed results. Programs are custom tailored to each site and to each water treatment application. The programs consist of a combination of chemical treatment and filtration hardware, software, training, service, supplies, remote monitoring, alert notification, and on-going support. Every program includes 24 hours per day direct automatic control of water chemistry and the establishment of a comprehensive CES water quality treatment program on your site. For more information, call (561) 744-1557 or visit **www.ceswaterquality.com**.

Did these factors affect all types of chlorine equally? How long will this situation last? What does that mean for the condominium associations finally opening their pools for the 2021 summer season?

Finally, what are the potential short-, mid-, and long-term solutions for condominium pools to protect themselves from a major disruption?

ALL CHLORINE IS NOT ALIKE

Different types of chlorine are disproportionately affected by these events. The plant fire primarily cut the production of trichloroisocyanuric acid (trichlor), hockey puck-shaped tablets which are used in a large percentage of residential pools, although they are still used in some smaller condominium pools. However, as this supply was cut, many were forced to turn to other types of chlorine, namely sodium hypochlorite (liquid chlorine or bleach) and calcium hypochlorite (cal hypo). This increased demand contributed to shortages and raised prices, although bleach and cal hypo were affected less.

SOLUTIONS FOR RESOLVING CHLORINE SHORTAGES

Short-Term: Use Less Chlorine.

The simplest way for the condominium to protect itself is to use less chemicals. While the Department of Health code spells out minimum chlorination levels, there are no style points given for over-chlorination. The easiest way to use less is to use only what is required, and not much more. The two quickest ways to accomplish this are to take

direct control of your water chemistry and to add specialty chemicals that selectively help limit consumption.

Direct control of water chemistry was popularized in condominium pools almost 40 years ago, but some facilities have not fully embraced the technology or are employing a rudimentary form of control. Many facilities have modernized their water chemistry control systems to include 24/7/365 remote monitoring and control with alert notification of out-of-range readings. This is a tighter level of control that continually minimizes the amount of chemicals used, helps stretch the chemical budget, and minimizes the effect of higher prices and shortages.

Another way to use less chlorine is to protect the chlorine in your pool water from degradation from sunlight (UV rays). This is simple to do but can be overdone, sometimes causing more problems than it resolves. The use of cyanuric acid (CYA) or "stabilizer" in moderate amounts equal to 15–30 parts per million (PPM) can cut chlorine consumption by 40–50 percent, while helping maintain crystal clear water. Some pool companies and pool stores mistakenly recommend adding too much CYA to pool water—overprotecting the chlorine molecule and impeding optimum water quality. The practice of over-stabilization with CYA became more dangerous after the release of the 2016 Centers for Disease Control (CDC) Guidelines for Fecal Incident Response. The CDC guidelines quantified that higher CYA levels impede disinfection so much that it was nearly impossible to properly treat pool water after an accidental fecal release (AFR) with CYA levels above 15 PPM, requiring that pools be drained to levels <15 PPM prior to AFR treatment. Therefore, pools that are prone to AFRs would be best served to keep CYA levels <15 PPM, or they would need to close the pool, drain the pool by half or more, refill, then shock the pool for up to 20 hours, and dechlorinate before opening the pool back up to patrons, in order to fully comply with CDC guidelines.

Mid-Term: Switch to a Different Type of Chlorine.

Those using trichlor tabs might be best served by considering a switch to a more readily available and commercial-grade chemical. While the (post-fire) trichlor supply and demand situation will surely get resolved in the long term, most feel that it is not the optimum chemical for higher-use commercial pools anyway. Why? Referring to the previous section on CYA, the use of trichlor tablets will continually increase the CYA level in pool water, resulting in levels well above the recommended 0–30 PPM thresholds in a matter of weeks or months. A more commercial strategy is to utilize a chlorine compound that does not contain CYA, namely either bleach or cal hypo, and add desired amounts of CYA manually.

Another mid-term solution is to locate and utilize a "loyal" chlorine supply source during these turbulent times. Some facilities continually switch among different suppliers, playing them against each other trying to save a few cents on chemical costs, and find themselves being abandoned during shortages. It appears that non-loyal customers are the first to get dropped when chlorine is in short supply while loyal customers are more apt to be taken care of.

Long-Term: Make Your Own Chlorine.

Over the past 15 years, many hundreds of condominiums have experienced great success in making chlorine on site, mostly out of pool water itself. Decades ago, however, saline chlorination—the prevalent strategy—had a poor track record, and most residential-grade systems experienced inconsistent chlorine production rates and short system life. However, newer single-cell system designs and more professional installation and service strategies have completely reversed those trends, making carefully chosen forms of saline chlorination a safe long-term investment for the condominium.

Saline chlorination makes chlorine out of pure salt and small amounts of electricity, both readily available even under the most extreme market conditions. There are two different system configurations: "salt in pool" and "off-line." The "salt in pool" process maintains the pool water at a mildly saline state between 3,500 and 6,000 PPM of salinity, or 10–15 percent the salinity level of seawater. This mild salinity produces a popular "mineral pool" environment for bathers and is reportedly gentler and more pleasant to patron's eyes and skin. As this mildly saline water passes by a special reaction cell in the pool recirculation system, chlorine is produced and distributed throughout the pool. The process is normally controlled via a chemistry control system, and a redundant chemical feeder is usually integrated

into the design in order to assure proper chlorination during periods of high bather loads or extreme weather conditions.

A second type of saline chlorination does not inject the salt directly into the pool water, but makes chlorine "off-line" in a separate side stream loop. The most successful industry-approved type of this system is available through a sole U.S. manufacturer and is typically provided in a skid-mounted package that is installed in the equipment room. While the two technologies make chlorine in a similar fashion, the "off-line" version can make chlorine for up to four bodies of water at the same time and better fits the definition of a "chlorine factory" in your equipment room.

Both of these technologies have demonstrated the ability to save more money than they cost on a monthly basis (utilizing a three-year lease), so the "payback" to the installation is instantaneous in the eyes of many. There are some caveats to a successful installation as some of these systems have been severely undersized by rookie installation companies, and that miscalculation partially led to poor performance and short system life. Therefore, the condominium is best served by closely checking the references of similar system installations to assure that they are getting a true long-term value for their owners and patrons.

CONCLUSION

The chlorine shortage is very real and could cost the unprepared condominium thousands of unbudgeted dollars a year. However, there are simple yet proven short-, mid- and long-term strategies that will allow owners to sidestep major issues and continue to operate with minimal disruption.

As the country continues to recover from the pandemic, and swimming pool use returns to pre-pandemic levels, the recovery from these shortages should continue to make progress. The ability of the condominium to avoid major issues is squarely in the control of those in charge, and a few minor adjustments can go a long way to protecting the owner and patrons from major issues. ■