

## Making Full Day Pool Closures A Thing of The Past

# Case Study

### Background

This case study reviews how a new technology resolved lingering air and water quality issues on a busy YMCA pool.

### The Problem

A popular YMCA in upstate South Carolina experienced a very active aquatics schedule that consistently compromised the water and air quality due to high demand during swim team practice, swimming competitions and other heavy bather load events. This is a problem that most Aquatic professionals can relate to. The 120,000 indoor-pool has a 5-hr turnover using AFM® filters flowing at 11.79 gpm/ft<sup>2</sup>. The facility was equipped with a Paddock in-deck Evacuator® system along with a Sentry UV system to help alleviate some of the air quality issues resulting from the disinfection byproducts (DBP) (chloramines etc.). The YMCA also incorporated a BECSys5 controller along with a Pulsar calcium hypochlorite chlorine feed system and the acid system utilized a 5:1 dilution. They typically were able to maintain 0.6 PPM (parts per million) combined chlorine with an ORP of 760mV and 3-4 PPM free chlorine. However, during heavy bather loads the air quality problems emerged, often leaving swimmers gasping.

### The Solution

After demonstrating remarkable results at other aquatic venues experiencing these common conditions, Duffield Aquatics proposed and implemented a Cryptolyte® trial in August of 2024. The BECSys5 was upgraded to a Cryptolyte® Control System by installing a flow-cell with a Cryptolyte® sensor and inserting a new Cryptolyte® software chip into the BECSys5 controller. A chemical feed pump was installed to feed the Cryptolyte®. Once the controller was rebooted, the system was ready to operate as an Integrated Cryptolyte® Control System.



A start-up remediation cycle was scheduled in the evening when the pool was closed. Prior to implementing the remediation cycle, the UV system was turned off. Cryptolyte® is applied as a shock treatment during start-up to remediate not only the contaminants in the water (e.g. DBPs, organic contaminants etc.) but also destroy and remove accumulated Biofilms and the encapsulated Chlorine resistant pathogens from the entire circulating system. The patented Cryptolyte® controller Controls, Confirms & Documents the entire process. After the entire pool and circulating system is remediated, the Cryptolyte® controller performs daily remediation cycles to kill undetected pathogens and remove contaminants before they can accumulate and compromise the water and air quality thereby sustaining the pristine environment.



## The Result

Upon completion of the start-up remediation, the results were dramatic. Chloramines measured 0.0 PPM and remain 0.0 PPM to this day. Free Chlorine is controlled at 2.0 PPM even at peak bather loads while sustaining an ORP between 820 to 830mV. The UV system has remained OFF since implementation of Cryptolyte®.

There has been a significant reduction in Chlorine use and various shock treatments have been eliminated.

Without any further upgrades in equipment (larger chemical feed systems), fecal incidents can be remediated in 90-minutes allowing unprecedented recovery and re-opening after a fecal incident.

Maintenance remediation cycles are performed daily (see illustration) using low levels of Cryptolyte® to remediate the system while the pool is closed. Undetected Chlorine-resistant Pathogens that pose a risk are remediated along with removal of precursors and organic contaminants that lead to DBPs and poor water and air quality. Cryptolyte® is NSF 60 certified for use in drinking water at concentrations higher than that used during the maintenance remediation cycle so no adjustments to water chemistry are needed prior to reopening.

## What is Cryptolyte® & How Does it Work

Cryptolyte® is an EPA approved treatment that kills 99.9% of Cryptosporidium in swimming pools in as little as 30- minutes and has been awarded numerous US patents based on its innovative technologies including the process control that Controls, Confirms & Documents the entire process. Cryptolyte® can be implemented with NO upfront cost and typically pays for itself with reduced chemical and energy savings, thereby allowing facilities to implement Cryptolyte® within their existing operating budget.

The integrated Cryptolyte® system controls the removal the oxidant demand from the entire system at an accelerated rate. Consider, the CDC established a CT Value of 15,300 (mg/l x min) for chlorine to kill 99.9% of chlorine resistant Cryptosporidium which typically requires the contaminated pool to be out-of-commission for the entire day.

By comparison, the integrated Cryptolyte® system can remediate the ENTIRE pool system is as little at 30-minutes and allow re-opening in as little as 1-hr after a fecal incident. The Remediation Cycle is Controlled, Confirmed and Documented thereby mitigating risk. The same powerful effects that kill chlorine resistant Cryptosporidium also wreak havoc on organic contaminants that form DBPs thereby reducing oxidant (chlorine) demand, so success is assured.