

Ask the Expert

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Welcome back to our “Ask the Expert” feature, designed to assist you with any and all issues related to swimming pool water, mechanical equipment, space conditioning, and code compliance. Ask a question, and we will answer to the best of our ability.

In the fall issue, we discussed the big three of successful swim school pool water quality as being:

- Turnover rate and pipe sizing
- Filtration
- Pool Water Treatment

In this issue we have been asked to drill down and demystify the complexities surrounding Pool Water Treatment, hopefully without putting you to sleep!

As we mentioned last issue: Chlorine is an essential component in drinking water and pool water treatment, but it is very limited in its role as a “complete solution”. Every state and national swimming pool code requires some form of chlorination and probably always will. While it is not the strongest oxidizer in the pack, properly controlled, it serves a very important role in the overall treatment programs for just about any pool.

What is the best chlorine to use? This is somewhat a trick question as at the end of the day chlorine is broken down in the pool water into HOCL (the killing/oxidation agent) and some sort of byproduct. Different types of chlorine compounds provide similar

levels of HOCL, but their byproducts vary tremendously. Sodium hypochlorite (bleach) provides HOCL plus (you guessed it) a salt byproduct. TriChlor (hockey puck-shaped tablet) provides a stabilizer byproduct, calcium hypochlorite (Cal Hypo) provides a calcium byproduct, and gas chlorine provides a byproduct that is literally muriatic acid.

Which is best for your pool? A couple will work great, and a couple should be removed immediately from consideration. Gas chlorine is too dangerous and subject to too many regulations to make sense in a small swim school pool. One down. TriChlor’s byproduct, cyanuric acid or stabilizer, sole role is to protect chlorine from UV degradation. Not much of that in your indoor pool, huh? On the flip side, stabilizer will accumulate quickly (forcing continual and aggressive draining), lower ORP levels, cannibalize important alkalinity, and put a dent in your wallet. TriChlor is OK for residential pools, but is not recommended on busy Swim School type pools. Even shocking with TriChlor products is problematic and is not recommended.

Bleach and Cal Hypo are by far the most popular. Bleach is a convenient liquid that is available almost anywhere. In smaller quantities for Swim Schools we have seen the prices elevate anywhere between \$1.50 to 3.00 per gallon. It is best fed with a peristaltic feeder, although a “solution feeder” works the

best on larger pools. It has the highest pH of its class, so you will need to use significantly more acid than other alternatives. It also does not provide calcium and alkalinity, so you will NEED to periodically measure Total alkalinity and calcium hardness periodically and manually add sodium bicarbonate, and calcium chlorine to keep the pool in balance. What happens if you don’t? Don’t worry, the water will balance itself, negatively affecting pool finish, grout, heaters, piping, etc. along the way.

Cal Hypo is also an attractive alternative as it provides the calcium and chlorine (and with some brands even the alkalinity) for your pool water balance, while using up to 1/10 of the muriatic acid as bleach. It is available in both granular and a tablet (briquette) form, which is easier to feed with specialized feeders. This alternative is gaining in popularity as the overall cost of operation is equal to or less than with bleach, and the “all-in-one” versions make water balance a snap for your non-chemist operators.

Regardless of the type used you will want to tightly control the dispensing of both chlorine and pH using a chemistry control system. Why? Both over chlorination and under chlorination will provide disastrous results, including formation of chloramines that emit caustic and noxious fumes and that are linked to eye burn, asthma, facil-

ity degradation, and employee/patron complaints. Lack of pH control can destroy your pool equipment and/or cause chlorine to be worth a small fraction of its rated strength, this makes direct chemistry control key. Many swim schools utilize chemistry control system that also include powerful remote control and alert notification systems to help prevent accidents, avoid liability, and promote happy (repeat) customers.

So, if you are currently hand feeding your chemicals, using stabilized chlorine, or have a lot of chemical feed interruptions, you are going to be at a tremendous disadvantage, and will always be trying to recover from a bad situation. On the other hand if you feed an un-stabilized chlorine via a reliable chemistry controller, and quickly correct any feed mishaps, you are laying a

solid foundation. That is, it is the best you can expect from a chlorine only environment.

How much chlorine is enough? Best practice is to maintain the highest ORP possible (above 750 mV) while maintaining less than 2.0 PPM of chlorine. Don't understand what I'm talking about? Please inquire, as it is important to know about the ORP/chlorine relationship (we will cover in a future article).

What about salt chlorination? We'll cover that in future article as well, but suffice to say that it follows most of the same rules a other types of chlorine above. Some type of saline will provide minor relief from chloramine production as do a select type of chlorinators.

But, is chlorination alone enough? Not really. Once you experience any

significant bather loads, you will need to implement some alternative (higher strength) oxidation to help handle the workload. Suitable candidates (in order of consistent success) are medium pressure UV, low pressure UV, ozone, peroxylytes, saline, etc. Each system is designed to handle specific needs, and some are more effective than others in certain roles. We will be dedicating a full article on these valuable alternatives. If you need additional information NOW, please inquire.

Please feel free to forward your questions and comments through the USSSA office, or directly to me via email at amendoza@ceswaterquality.com.

Best Regards,
Alvaro G. Mendoza

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