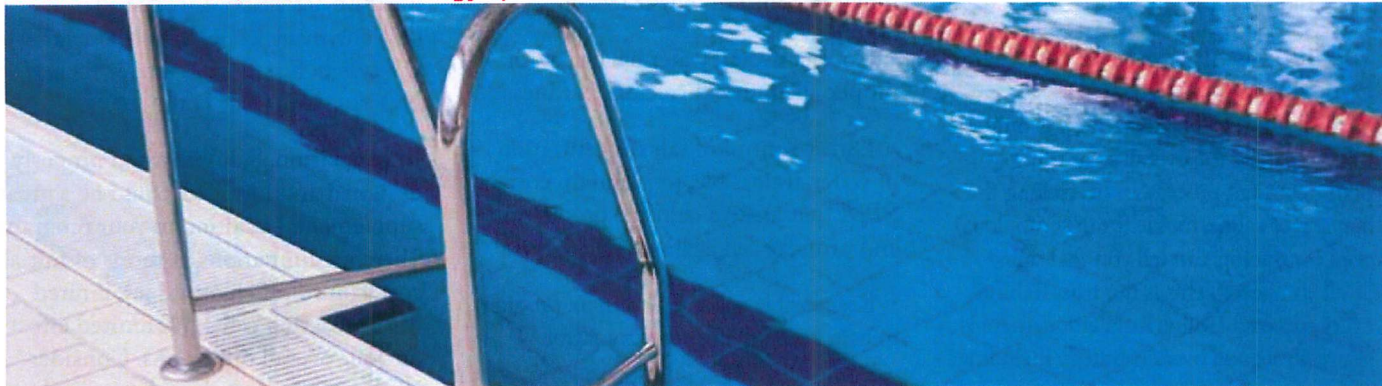


Ask AI

Alvaro G. Mendoza, Commercial Energy Specialists, Inc.



Welcome back! Our “Ask the Expert” segment is now “Ask AI”. This feature is 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.

Last December we discussed which type of chlorination system might work best for your swim school pool. We briefly mentioned “saline” chlorination, and promised to discuss it in a future issue. Last week we received several calls regarding the use of saline... so here goes.

First of all, there is a lot of misinformation regarding saline, and it is our primary goal to peel back the guano and get to the real facts (strengths and weaknesses) of this intriguing technology. The misinformation includes: saline is a non-chlorine technology, saline kills chloramines, saline is an inexpensive technology to install, saline is all you need to run your pool, and it can be used effectively as a stand-alone technology.

First some saline basics:

Saline Chlorination is an electrolytic technology in which the pool water is treated with solar (additive free) salt to achieve a level of 2,500 to 5,000 PPM (sea water is 35,000 PPM), and in which special electronic equipment is used to convert that saline solution to chlorine. Traditionally the electronics were “in-line” and imbedded in the recirculation piping, but new technology uses “off-

line”, in which the salt is not added to the pool, but used in a side stream process to manufacture chlorine out of pool water, using the same basic electrolytic technology. The salt is re-cycled and only needs to be replenished when there is water loss due to splash out, backwash, pool leaks, or dilution. Water loss through evaporation leaves the salt behind.

#1 Saline is a non-chlorine technology

Saline Chlorination is not new. It has been around on a residential basis since the early 80s, but electrolytic chlorination technology itself has been around since earlier this century. It is amazing how many people say they are attracted to saline because it doesn't use chlorine... Hello! The electrolytic process makes free chlorine directly in the pipes, and the amount of chlorine manufactured is a direct result of the size of the electrolytic cells, and the salt content. Recurring customer claims of silky smooth water, mineral pool feel, and less irritation to eyes and skin make people think it is a non-chlorine technology, but it's not.

#2 Saline kills chloramines

There is some truth to this, but it has limitations. The electrolytic process produces free chlorine, and it has a tendency to burn off chloramines in the process (like a mini-shock as the water is passing through the cells). Chloramines, as the number one cause of irritation and eye burn, are formed via a reaction between chlorine and byproduct of swimmer

wastes (proteins, perspiration, urine, etc.). We must consider the RATE at which chloramines are being formed versus the rate at which they can be removed through the electrolytic process. In a residential pool, with a limited chloramine production, an electrolytic chlorination system may indeed be able to burn off a majority of the chloramines. However, in a heavily used swim school pool, the chloramine production can far outstrip the ability for the saline chlorinator to keep the chloramine levels under control. This has been proven in the field for many years. So the correct answer is YES, saline can help remove some chloramines, but NO, it cannot guarantee a chloramine-free pool, especially for a swim school.

#3 Saline is an inexpensive technology to install

A residential-grade saline system can be installed for between \$1,000-\$1,500, and will do a fine job. On a commercial pool, however, chlorinator sizing is mandated by local (DOH) Health codes and national “best practices”. While you could install a residential 1.5 lb. cell, DOH may require a 15 lb. cell, or larger, for your 25 x 50 indoor swim school pool. Also commercial systems cost more than residential ones as the plate technology and the electronics need to be beefed up to handle 24/7 operation. *All in all*, you get what you pay for as residential grade systems have not fared well in commercial applications, but a properly

sized commercial system will save you more money for many years.

#4 Saline is all you need to operate your pool

While saline can be awesome, it is only a small part of the overall swimming pool treatment process. In overselling the benefits of saline, rookie (or unscrupulous) pool contractors can tell you that saline is "all you need". This is not true. Behind every successful saline installation, there is generally a good overall strategy including:

- Proper saline sizing of 7.2 lbs. output capacity per 100 GPM of flow, or a smaller saline system with a redundant feeder with that capacity
- Direct control of pH and chlorine (ORP) with an automated control

system, preferably one that also integrates the redundant feeder

- Correct overall water balance with proper alkalinity & calcium hardness
- Direct control of salt concentration in water, if possible, to maintain correct PPM that assures chlorine production and protects cell against early demise
- Responsible water replacement program to help keep organics under control

#5 Saline is an effective stand-alone technology

While it can be a major player, saline is not best used as a stand-alone technology. Since it is best to take direct control of your chloramines, you more than likely will need to integrate a UV sterilizer into your

program. Since both of these are "capital intensive" installations, if you had to choose only one, many schools have chosen the UV system first. Besides money, there is NO issue with using both.

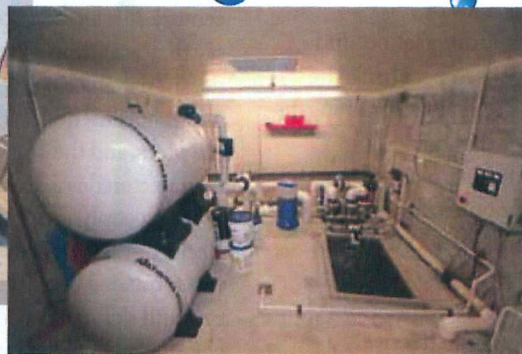
In conclusion, Saline...when properly designed and installed, could be a great supplemental addition to your program. There are limitations in terms of initial cost, control of chloramines, limited life of reaction cells, and limited effect on your overall operations. Consider all the strengths and weakness, and use saline if and when the application works best for you.

Best Regards,

ALVARO G. MENDOZA

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

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