Ask Al

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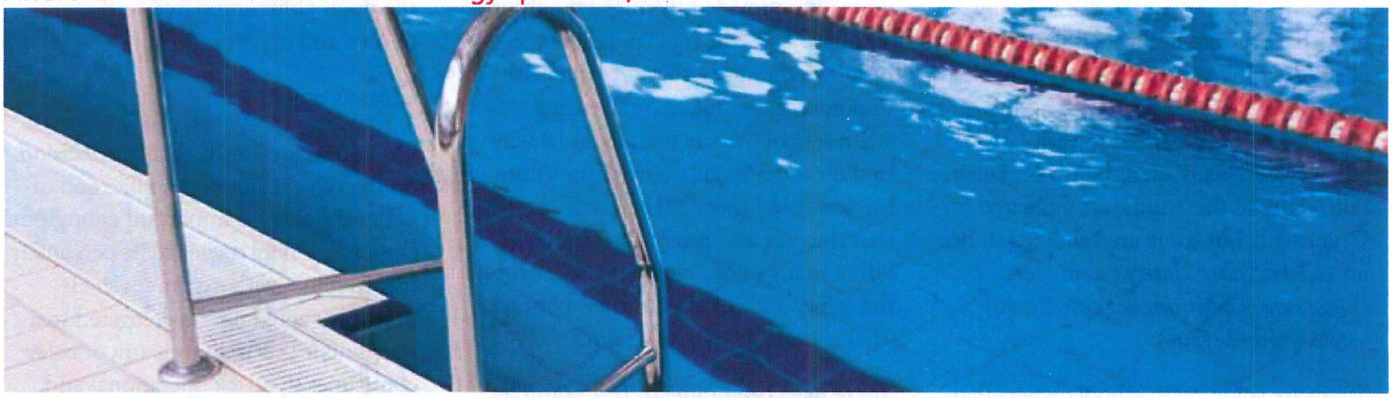

Welcome back to our "Ask the Expert" feature, designed to assist you with any and all issues related to swimming pool water, mechanical equipment, space conditioning, and code compliance. Ask a question, and we will answer to the best of our ability.

It was great seeing many of you during the recent USSSA conference in Phoenix and we enjoyed sharing your questions and concerns regarding a wide variety of pool issues. Here was a lively topic during the show.

Q: We understand that UV is important in handling indoor chloramine issues, but are confused with the different types and claims.

A: You are correct in both cases. UV is the key weapon that owners can use to combat eye and lung irritation in swim school operation. There is also a lot of confusion regarding UV. There are units that work well and many others that don't, and the swim school owner has a difficult time sorting fact from fiction.

Here are a couple of key facts:

NSF® certification: In much of the US it is a code requirement that equipment used in a commercial pool be tested and certified to NSF® Standard 50. NSF® tests for safety, materials, and verifies performance and output, so it is also a "best practice" recommendation even if codes don't require. Some school owners showed us smaller residential grade, or spa-grade units, that they had used (*or were considering using*), that were NOT certified. This is not a great idea as you don't really know what you're getting. One quick way to check is to look for a NSF® sticker or logo on the equipment label or the literature. Certification is expensive, so believe me that if the equipment is certified, the manufacturer will feature it prominently.

EPA Validation: This is not to be confused with NSF® certification. Validation from USEPA (*publication EPA 815-R-06-007*) refers to testing and verification of 99.9+% Crypto kill on a single pass through the UV chamber, based on special (*and quite expensive*) testing protocol. Many state health codes require validation when UV is used on challenged (*critical*) bodies of water, including interactive water activity pools, splash pads, etc. Under the testing protocol, live Crypto-like surrogates are subjected to the UV system being tested at various flow rates, and the maximum flow rate is established for Crypto kill for each model being tested. That is why a specific size of UV may only be used until 365 GPM, while another model must be used at 375 GPM. At this time only Medium Pressure UV units have achieved validation, although several low-pressure amalgam manufactures note that their validation is eminent. Validation is not yet a requirement for swim school pools, but some suggest that the new Model Aquatic Health Code (MAHC) may classify swim school pools as "critical water," and may require a validated unit.

Three Types of UV: There are three different types of UV that vary in design, output, wavelength, and cost. They have varying track records in swim school operations. Here are a few points on each.

- ***Low pressure UV (LP):*** These utilize standard mercury lamps that work in the 254 nm range of the light spectrum. They have the lowest operating temperature and UV output of the three types. There are hundreds of cheap, NON NSF® certified models all over the internet, and these should be avoided at all costs.

- ***Low Pressure - Amalgam UV:*** These operate at higher temperatures in both 254 nm and 185 nm ranges to provide many times the output of standard LP units. It is still a low-pressure technology that uses lamps in the 100-150 Watts range, with 12,000-16,000 hour advertised lamp life. The lamps are located inside of special quartz glass sleeves that need to be manually cleaned periodically. Most lamp/sleeve units are housed in a Stainless Steel vessel or a PVC vessel with a Stainless Steel internal sleeve. Popular Amalgam units are NSF® certified.

- ***Medium pressure UV (MP):*** These units utilize high intensity lights that operate in a much wider spectrum (*180 nm to 400 nm*) and hotter temperatures

than low pressure. The lamps are normally 1,000 to 1,500 Watts. Many units have automated wiper blades to clean the glass sleeve, and they also provide an ongoing display of light intensity in the chamber to verify adequate intensity required for organism kill. Many of these units are validated for Crypto kill, but some are validated under unrealistic water clarity parameters (*make sure your unit is not validated at >94% transmissivity*).

There are some swim school owners that were "sold" a properly sized UV system, but when we see the photos, they actually received a woefully undersized ozone unit or non-NFS® low pressure UV. These will provide little to no help in the battle against chloramines or skin/eye irritation. While historically MP UV units have provided the highest output and have been the most popular type installed, they are also more expensive to purchase and maintain. Leading swim school owners that invest heavily in their water quality have successfully implemented these MP models also like that they are also providing "validated" kill of many undesirable organisms for the safety and comfort of their patrons. That is quite a powerful claim.

There have been quite of few examples in the past few years of swim schools enjoying great success with Low Pressure Amalgam units on several of their clubs. They may not claim to be the strongest UV available, and do not currently carry EPA Validation, but they reportedly are doing a great job keeping the pools chloramine free, and cost less to own and operate.

Clear as mud?

One thing for sure, is that the decision on the type, sizing, and application of UV technology is important enough for the swim school owner to be personally involved in – with expert advice. It probably should not be delegated to a pool builder, service company, or other companies that lack operational and service experience with UV or with heavily loaded swim school pools.

Best Regards,

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