

Ask AI

Alvaro G. Mendoza | Commercial Energy Specialists, Inc.



Welcome back to our “Ask AI” 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 this article we will take a preliminary look at a source of great concern to all swim school operators – skin and eye irritation. There are three major types of irritation, which we have grouped below for convenience. The good news is that they can be addressed with good strategy, some equipment, and a little discipline. While this pertains to all swim school pools, the effects are more pronounced with heavily used indoor pools.

Chemical Irritation: The most basic form of irritation, this is normally caused by improper or out of range chemical levels in the indoor pool. While excessive chlorine is the main focus of many, other chemical parameters such as out of range pH, calcium, and alkalinity are also common culprits. Low pH has been directly linked to eye irritation and is the major contributor to aggressive pool water balance. Alkalinity and calcium hardness are minor contributors but can combine to cause aggressive water.

Solution: The solution to basic chemical irritation is to take direct control of water chemistry on a minute-by-minute basis. A reliable

ORP/pH control system is one of the cornerstones of proper pool operation – especially with heavily used pools. A 7.3-7.5 pH level and an ORP greater than 700 mV is highly recommended, with a corresponding Chlorine level between 1.5 PPM and 3.0 PPM (see below). Calcium Hardness of 300-700 PPM and Alkalinity of 50-120 PPM are also needed in order to adjust the pool water to proper Langelier balance. Stabilizer should never be used on indoor pools under ANY circumstance. With direct control of pH and ORP, the other parameters can be reviewed and corrected on a weekly basis. Without this critical baseline step, any further solutions will be rendered somewhat useless.

Advanced Irritation: You can maintain chemical parameters absolutely perfectly 24/7 and still have severe irritation. The major culprit is combined chlorine or chloramines. These are formed by a reaction between chlorine and organic substances, both guaranteed to be present in every pool. You should test and monitor chloramine levels on a weekly basis at minimum, as the complaints will begin above 0.4 PPM. Holding tight chemical parameters, using a self-shocking chlorinator (Pulsar feeder, Solution™ feeder, some saline chlorinators, etc.), and maintaining higher ORP levels can minimize chloramines but not completely prevent. *NOTE: Chloramine irritation is linked to lifeguard lung, asthma, and*

other potentially harmful ailments. Many leading swim school operators are justifiably concerned about potential issues with instructors, parent, and students alike.

Solution: The solution to chloramines is to directly control them using Ultraviolet Light (UV). UV comes in two varieties – medium pressure and low pressure. Low pressure units are simpler in design, utilize less wattage (normally 100-150 watt lamps), and cost less to own and operate, but they operate in a more narrow wavelength. Some swim school owners have reported considerable success using these units, while others have not. Medium pressure UV units utilize higher wattage lamps (normally 1,000-1,500 watt), cost a little more to own and operate, and work in a broader light spectrum that encompasses all three types of chloramines (Mono, Di, & Tri-chloramine). They are the choice of many USSSA member that successfully operate busy indoor pools with zero chloramine issues. While other types of systems are designed to remove chloramines with ventilation, air flow, etc., removing the chloramines from the water itself tackles the source of the problem and thus is the preferred method of operation.

Mystery Irritation: You can have all your chemical levels in perfect shape, and have a great medium pressure UV system cranking away – keeping your chloramine level at our near zero, and

STILL experience some irritation. This type is less severe than the other two, and normally affects swim school instructors more than it does the students or attending parents. It is much more difficult to diagnose and to eradicate. The culprit appears to be, among others things, carbon-based organics that have been busted up, but not completely removed from the pool water. Bad ventilation or other design issues can contribute to the problem.

Solution: There is no “one solution” as are many contributing factors, but here are a few tips to help you stay out of trouble.

Lose some water: The old adage that “dilution is the solution to pollution” is very true. Best practices

and Canadian / European codes dictate that pools should dilute with 4-10 gallons per each bather. It is recommended to lose a little water at a time, and newer designs opt for filters that lose a little water with each backwash. If you have a “water saving” filter, then you will need to be more diligent in your dilution strategy. We are all for saving water, just not in the swimming pool environment (for obvious reasons).

Stay on top of your water quality: Monitor your PPM to ORP relationship. If it takes more than 3.0 PPM to achieve 700 mV, your pool water is “sick” and needs to be recovered by shocking (Chlorine or non-Chlorine shocks) or other techniques.

Watch your additives: As soon as some irritation occurs, some instructors turn to jellies and creams that can actually make the situation worst. It is best to attack the issue with shocking and water dilution quickly, and thus prevent a more severe situation.

Yes, your water quality is an important investment in your facility. Irritation can scare away good customers forever, and bad news travels fast. Taking steps above can help you minimize this issue, and don't hesitate to contact us for more information if you have an extra difficult case.

Best Regards,

ALVARO G. MENDOZA

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