



What's in the Water?

Prevent Problems With Proper Pool Maintenance

BY DAWN KLINGENSMITH

Customers are picky and sometimes persnickety. Generally, their high standards for comfort and cleanliness keep managers of recreational facilities on their toes.

That may be true of fitness facilities, but swimming pools seem to be a different story.

Folks who would never tolerate a dirty shower stall at the gym will happily swim in murky pool water. "People swim in lakes and rivers, and those are cloudy," so they don't necessarily see cloudy water as a possible health risk, said Tom Lachocki, CEO of the National Swimming Pool Foundation in Colorado Springs, Colo.

Of course, "The expectation should be that you should see the bottom of the pool," he added.

Apparently, that was not an expectation of guests at the now-infamous public swimming pool in Fall River, Mass., where a dead body at the bottom of the deep end went undetected by lifeguards, health inspectors and swimmers for two days in June. Before the grisly discovery, a health inspector's report noted the water was "cloudy"; it was later determined that the pool should not have been open to the public with such poor water quality. In the wake of 36-year-old Marie Joseph's death, ruled an accidental drowning, several state employees were disciplined or fired.

Not only is murky water a sign of imbalanced water chemistry, which poses a health hazard, but "cloudy water also increases the risk of drowning because you can't see someone in distress," Lachocki said.

Even if swimmers don't understand the health risks associated with poorly treated water, it still seems surprising that the opacity of the pool didn't have a sufficient enough "ick" factor to turn patrons away. But apparently, pool users can stomach a lot of "ick."

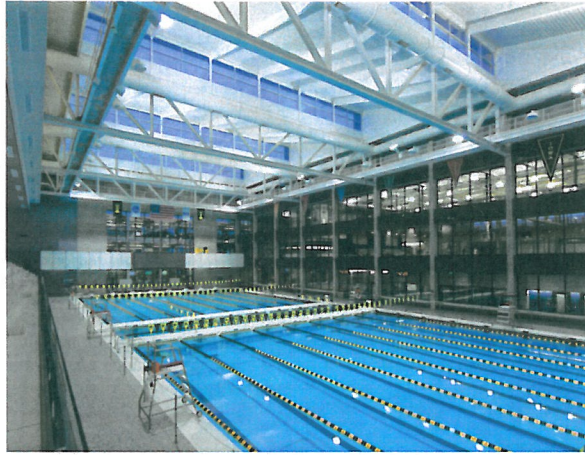


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In his years as a pool professional, Trevor Sherwood has seen it all, including a family who refused to vacate the pool after a baby's diaper ripped open and released its contents into the water. The family patriarch had taken the day off to swim with his kids, so by golly, they were going to swim. Pool management "had to call 911 to get the family out," said Sherwood, owner of Pool Operation Management in Brick, N.J.

"If there's a fecal accident or the water is too cloudy to see the main drain, the pool needs to be shut down immediately," said Sherwood, adding that clients of his company who fail to do so forfeit their contracts.

Since pool operators can't count on patrons or even health inspectors to sound an alarm when maintenance is subpar, the onus is on each operator to have responsible, trained staff and procedures in place to ensure the pool is safe, comfortable and inviting.

Down to Basics

The most common pool water issues are also (arguably) the most manageable and preventable, tracing back to two basics of pool maintenance: water chemistry and filtration. "With any swimming pool, these are the two most important things, and when a pool gets green or cloudy, one of these things is not working," Sherwood said.

While chlorine and pH levels typically are deemed most imperative, it's also

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important to monitor calcium hardness, alkalinity and cyanuric acid. Municipal pools and larger public facilities should conduct chemical readings hourly. Water chemistry "is easy to maintain in ideal ranges," Sherwood said, so suboptimal levels generally are a sign of lack of education or caring.

Weather events and large bather loads can affect chemical and sanitizer levels. Low levels of sanitizer will not effectively kill bacteria, which can cause swimmers to become ill. High levels can cause eye and skin irritation. A strong chemical smell is not an indication of too much sanitizer but may in fact mean that more chlorine is needed; the odor is caused when chlorine mixes with but does not effectively neutralize contaminants. A well-maintained pool has little odor.

Ensuring proper filtration and circulation, including turnover rate, throughout the pool also is critical to maintaining water clarity. There are three main filter types, and it is important to follow the manufacturer's guidelines when cleaning filter media. Keep an eye on the pump and its hair and lint basket as well as the flow meter and pressure gauges, which will indicate when there's a filter or pump problem.

A low flow rate "could mean there's dirt, oil or debris built up on the filter," said Matt Satterly, vice president of operations, USA Pools, Roswell, Ga.

For day-to-day maintenance and operations, "Many states require a list of procedures on how to run the facility," Sherwood said. A daily checklist might include everything from water testing and chemical adjustment to opening umbrellas, he said.

Other daily maintenance responsibilities include but are not limited to:

- Making sure main drain grates are bolted securely to the pool bottom and clearly visible from any point on the deck.
- Cleaning and disinfecting decks.
- Checking to see that ladders, guard chairs and other mounted equipment are secured in place.
- Checking to see that self-latching gates are functional and fencing is in good repair.
- Making sure rescue equipment is in good repair and immediately available for use, and the first aid kit is stocked and readily accessible.
- Making sure the poolside emergency telephone is functioning and labeled.
- Keeping doors to the equipment and chemical rooms locked and off-limits to unauthorized individuals.
- Maintaining a daily pool water analysis log with test findings and chemical adjustments.
- Maintaining water temperature within acceptable levels for



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the primary activities conducted in the pool.

- Cleaning and stocking restrooms and locker rooms.

Sherwood recommends facilities keep a detailed, illustrated supervisory plan detailing each and every procedure that's conducted on a daily or occasional basis.

Equipment Innovations

When it comes to pool care equipment and innovations, "Three main things

have come out that we're promoting to people," Sherwood said.

The first are the energy-saving variable speed pumps on the market. Variable speed pumps enable the pool pump to move water at slower speeds for significant energy savings, adjusting their speed according to need.

The second are commercial-grade automatic vacuums. "They have gotten really good for professional pools. The ones they have now are incredible," Sherwood said. "They can climb walls and clean tile, and they have a microchip that can figure out the size of the pool" and its dimensions and navigate accordingly.

Sherwood said an automatic vacuum, which can operate overnight, typically pays for itself in about a year by decreasing labor costs.

The third technology Sherwood recommends are commercial electrolytic chlorine generators, also called salt or saline systems. Basically, these are miniaturized chlorine manufacturing plants that dissolve natural salt (sodium chloride) into the pool water, which then flows through an electrolytic cell. Electrolysis separates the saline into its basic components, sodium and chlorine. Chlorine gas is produced by this process and goes to work to oxidize bacteria and purify the pool water. Following this process, most of the chloride and sodium re-bond to form salt again in a closed-loop system, so additional salt only needs to be added on occasion to make up for splash out and backwashing. "The generator creates chlorine right in the water," Lachocki said, "reducing the amount of chemicals purchased, handled and stored at facilities."

Salt systems have come down in cost while chlorine prices have risen, making them an economical as well as an eco-friendly choice. In places where the swimming season is year-round, a saline system can pay for itself in a year, Sherwood said.

In addition, patrons enjoy them, as the salinity is not detectable to the taste but is noticeable on the skin. "Female clients say it's like a day at the spa. It makes your skin feel really good and your hair feel great," Sherwood said.

Besides being gentler on patrons' eyes and skin, saline systems also cause less damage to equipment, Satterly said.

One other technology Lachocki recommends looking into are UV pool sanitation systems that utilize a high-intensity UV light to inactivate germs as they move through the circulation system. These systems are a supplement to chlorine, not a replacement, he said.

The Right Staff

Another common maintenance issue besides chemicals and filtration is lack of properly trained staff. It is recommended that a pool manager or operator be certified through a commercial pool operator certification program. However, the Centers for Disease Control analyzed common violations of local codes at aquatic facilities and found that 25 percent of the pools in jurisdictions requiring operators to be trained and certified did not have a trained individual on staff, Lachocki said.



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Training is available through a wide variety of venues. The class offered by Sherwood's company, for example, Pool Operation Management, teaches state and federal regulations for pool operation standards such as water testing frequency and acceptable chlorine levels. Also taught are liability and risk management; filtration systems and recirculation; pool chemistry and calculations; water sanitizing and testing; maintenance and troubleshooting; energy conservation; and management and personnel.

Operating a pool safely is not rocket science, "but it does involve some knowledge of chemistry, engineering, microbiology, risk management and math," Lachocki said.

With states and municipalities facing prolonged budget constraints, pool facilities sometimes shortsightedly attempt to "cheat on the level of staffing," Satterly said. For example, if an aquatics director moves on or is let go, the pool manager might be entrusted to "take over," Satterly said, though the manager lacks all the necessary training. While this might save money up front, costly problems can arise when an untrained individual tries to learn on the job.

State officials in South Dakota made news this past summer after cuts in the state budget eliminated the government's ability to monitor municipal water safety, leaving oversight up to city officials who could decide whether or not to test pool water.

Tellingly, in 2011, no pools were shut down due to health concerns related to water quality. In contrast, health officials in 2010 temporarily closed 20 city swimming pools, citing serious health concerns. This suggests that city officials may not be upholding the same standards.

A representative from the Water Quality and Health Council, based in Colorado, told the Rapid City Journal in September that officials who cut the program are being shortsighted because water-borne illnesses will ultimately cost South Dakota more than the \$29,469 the state is reportedly saving by ending the monitoring.

State regulators say the decision was made based on the trust that each city pool will follow recommendations to continue testing water every week, though it's not a requirement.

As for Rapid City, state records show its four city-run pools have a fairly clean record, failing just six of 780 weekly water tests over the past five years. City officials told the Rapid City Journal that the clean record "has a lot to do with the city's pool operators (being) certified through a national program" along with hourly spot checks.

Empowered Consumers

As both an informed industry insider and a protective dad, Lachocki takes along pool water test strips whenever he and his family visit an aquatics facility for a day of swimming. "That way I can tell if there's inadequate chlorine and if the pH is in the right range, much to the embarrassment of my teenage kids."

If the water doesn't pass, he rounds

up his family and leaves.

"Who has the most to gain or lose from a pool being properly operated? The person getting into the pool," said Lachocki, adding that the test strips only cost about \$10. "Empowering the consumer to do a quick test is the best way to hold facilities accountable."

Clearly, not every consumer cares whether pool water is clear. And many don't realize that even crystal clear water can harbor harmful bacteria, so it's not likely that a significant number of swimmers will come armed with higher expectations and test strips anytime soon.

But for the good of all, perhaps pool operators should imagine that every patron will literally "test the waters" and maintain their pools accordingly.

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