



☆ **5 TIPS** ☆
to keep your
HOTTUB

**CRYSTAL
CLEAR**

—By Karl K. Holt
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Keep Your Hot Tub Crystal Clear



Aero-Spa® high output ozone generator destroys organic compounds, eliminates or reduces issues with cloudy hot tub water, hot tub foam and hot tub chemical balance.



Deteriorating water quality, foam, foul chemical smells and the vicious cycle of chasing water clarity can ruin the hot tub experience. Instead of a relaxing “ah” feeling after work, you waste time, dump in more chemicals and balance the pH . . . only to have the water turn cloudy or look like a bubble bath by the weekend.

That “new hot tub honeymoon feeling” often ends in bitter divorce and an ad on Craig’s List:

Hot tub for sale. \$550 or best offer.

Here’s the secret to a happy hot tub marriage: automate the maintenance with an Aero-Spa high output Ozone system.

Ozone instantly annihilates bacteria and organic solids on contact. By letting Aero-Spa do most of the cleaning work, it becomes your primary defense against cloudy water, foaming, bacteria, and chemical odors. Even better, Aero-Spa helps reduce chemical use and the associated eye and skin irritation, swimwear fading and chloramine odors. In addition to harnessing the power of Ozone, following the simple steps outlined in this article will keep your hot tub water crystal clear — and that “ah” feeling only moments away when you’re ready to relax.

We'd spend the next five days getting the water clear and the pH balanced, only to start the cycle again after the next weekend.



I developed the Aero-Spa after enduring my own hot tub saga. We live on a small lake in Wisconsin, and our three children would run from the lake and jump straight into the hot tub. A few days later, the water turned green from algae growth. We'd spend the next five days getting the water clear and the pH balanced, only to start the cycle again after the next weekend.

As a mechanical engineer with a decent background in chemistry, I knew the root cause of the situation and set out to solve the problem. That was back in 2005. Since I developed and installed an Aero-Spa high output Ozone system in my own hot tub my chlorine and chemical use is practically non-existent, and now I save about \$600 annually on chemicals. Thanks to the power of Ozone, enjoying crystal clear water is a simple matter of setting the Aero-Spa timer to run twice a day. After a weekend of especially heavy use, I'll run the unit overnight and I'm guaranteed to have clear water on Monday morning.

The Aero-Spa system can be installed in minutes without tools. For less than your annual chemical costs, the Aero-Spa system can keep your hot tub honeymoon going for the life of your spa!

Now with more than a decade of experience, I've learned how to balance hot tub water and how to maintain a hot tub — and do it in less time, with less frustration and at a lower overall cost. Now, I'd like to share my knowledge with you in these ***“Five Tips to Keep your Hot Tub Crystal Clear.”***

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With the exception of a brand new hot tub, thoroughly clean a hot tub before filling it. This includes the piping system, filter and interior walls. There are four steps to properly cleaning a tub.

STEP 1

Remove the filter and soak it in filter cleaner for at least one hour; agitate the filter in the solution every 10 minutes. After cleaning, use a garden hose with a jet nozzle to completely remove the solution and any debris. Continue to flush the filter until the run-off water is clear.

STEP 2

With the tub full of old water (and after removing the filter), apply hot tub plumbing cleaner to the water and circulate all of the jets for at least one hour. If your tub has not been cleaned before, the solution can remain in the tub for up to 24 hours. Circulate the water with the jet pumps as often as possible to improve cleaning.

STEP 3

After soaking, drain the tub and hose down the sidewalls. Using plumbing cleaner solution, scrub the interior walls. For tubs with a textured or dull finish, scrub the walls with a stiff plastic bristle brush. For tubs with a glossy finish, test scrub in an inconspicuous area to ensure you don't damage the finish.

STEP 4

After cleaning the walls, flush the walls and pipes with plenty of water to remove debris and cleaning solution. If the walls dried before flushing, you may need to wipe them with a soft cloth while flushing. Continue to flush the tub until the discharge water runs clear.

Now you're ready to fill the tub, which brings us to tip #2.

continued

In an ideal world, the perfect hot tub water chemistry comes straight from the tap. Because that rarely happens, follow these three steps:

STEP 1

Run the fill water through a fill filter to remove lead, copper, mercury, arsenic, iron, chlorine, pesticides and VOCs (volatile organic compounds). Using a filter minimizes contaminants, and that's a great start.

STEP 2

If the water entering your house requires an iron filter or water softener, fill the tub with soft water. Your goal is to intentionally create a deficiency of hardness by having water with a low calcium level.

STEP 3

Adjust the calcium hardness to 150 - 200 PPM, typically by adding calcium chloride, and maintain it within this range. Your local spa store can provide products to increase or decrease the calcium hardness.

Some people suggest a mix of hard water and soft water. However, this approach can lead to a science experiment gone bad. Once the hardness is too high, it can only be controlled with chemicals to keep the calcium dissolved in solution. If you don't keep the calcium in solution, a scaling problem will develop, or sometimes the water will turn cloudy.

The simple fact is that calcium hardness cannot be "removed." On the other hand, you can easily increase calcium hardness to the proper level. Once the correct hardness is achieved, it should not change. Think of adjusting hardness like adding jalapenos to chili . . . you can always add more, but there's no removing the heat once it's in the pot.

The best practices noted below minimize “organic loading.” After enough organic solids become suspended in the water, the water turns cloudy. Depending on the type of organics, notably soap, they may also cause hot tub foam.

STEP 1

Be smart about your swimwear: dedicate a suit for the hot tub. Wash the suit in a mild detergent, skip the fabric softer, rinse twice and hang dry (or at least don't use a dryer sheet).

STEP 2

Resist the temptation to plunge into your hot tub immediately after work, exercising or household/yard chores. Shower first to remove perspiration, soap, deodorants, lotions, perfumes/colognes and make-up that would otherwise wash off in the hot tub.

STEP 3

Don't go between a lake or ocean and a hot tub without showering and changing suits. Following these three bits of advice will minimize chemical use and balancing requirements. Of course, I understand that not everyone will follow this advice. Fortunately, the Aero-Spa specifically addresses the issue of organic loading, and more on that in tip #5.

Once you achieve hot tub chemical harmony, Aero-Spa® will help keep your system in balance and minimize maintenance efforts.

After the hot tub is filled with fresh water, balance the water chemistry per the manufacturers or water technicians' specifications. Keep on the maintenance schedule to ensure your water stays in balance. If you wait too long between checks, it may be a lot of work to get the water back into balance. Just a brief review of water chemistry will give you an appreciation of how tough this balancing act is:

HARD WATER

Hard water has high mineral content, and it forms when water percolates through deposits of limestone and chalk, which are largely made up of calcium and magnesium carbonates. Hard water can produce a buildup of lime scale, which clogs plumbing and promotes corrosion.

SOFT WATER

Soft water contains low concentrations of ions, particularly of calcium and magnesium ions. The low number of ions is the reason why soft water doesn't wash away soap very well when showering. However, it doesn't produce the deposits that lead to lime scale.

SOFTENED WATER

A water softener, used to treat hard water, replaces calcium and magnesium ions with sodium ions from the water softener salt.

pH

pH is a numeric scale going from 0 to 14 that is used to measure the acidity or basicity your hot tub water. Pure water is neutral and has a pH of 7. Water with a pH of less than 7 is acidic, and water with a pH greater than 7 is basic. The proper pH of a hot tub should be between 7.2 and 7.8.

TOTAL ALKALINITY

Total alkalinity measures the capacity of a solution (your hot tub water) to neutralize an acid based on the quantity of alkaline substances dissolved in the water. Your goal is to have enough TA to stabilize pH levels, prevent corrosion and optimize sanitizer efficiency . . . but without going too high, as that could lead to scaling and clouding of hard water. Of course, the various spa chemicals you need to add to combat one problem (such as chlorine-based shock) could change the pH, which means you then need to add additional chemicals to counter-balance the other chemicals you just added...and some experts recommend waiting two hours before adding the next chemical! Not exactly a relaxing hot tub experience, is it?

Once you achieve hot tub chemical harmony, Aero-Spa will help keep your system in balance and minimize maintenance efforts.

Instead of a vicious cycle of adding chemicals, waiting, measuring, adding, waiting, measuring, repeat ad infinitum, wouldn't it be better to minimize chemical use in the first place? That's where Aero-Spa comes in.

Ozone, or O₃, is a molecule made from three oxygen atoms instead of the normal two (O₂). The Aero-Spa works by passing air through a corona arc that ionizes (splits up) some of the O₂ molecules to create free oxygen molecules. These free oxygen molecules then attach to some of the remaining O₂ molecules and creates Ozone, which is fed into the hot tub via a silicone tube and a diffuser (the tube just drapes over the side of the hot tub; it's that simple).

Once destroyed, the organic compounds turn into inert solids, fall out of solution, get picked up by the spa filter and viola — clear water!

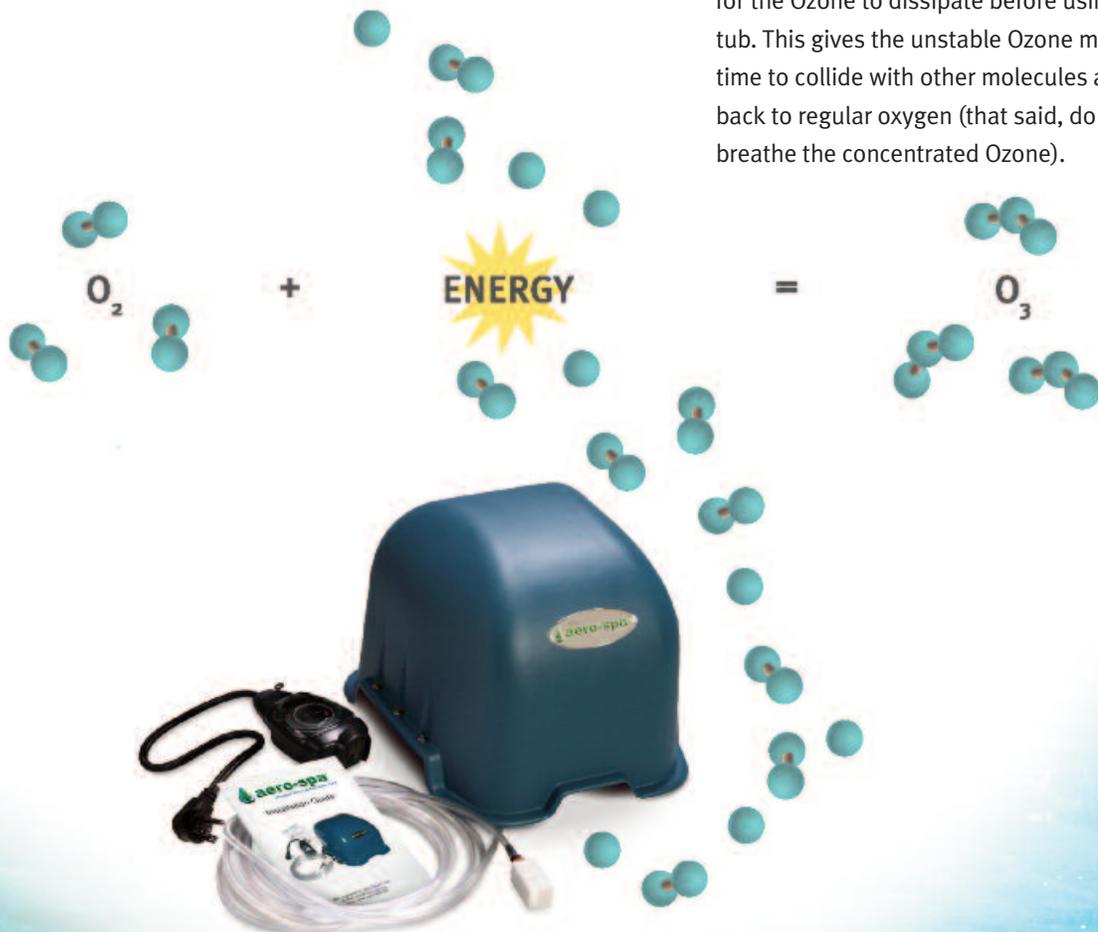
Most hot tub manufacturers now offer an optional or built-in Ozone generator. However, many of these have an output limited to 50 milligrams per hour. Because the generator operates when the jets turn on and there could be people in the hot tub at that point, OSHA wants to limit their exposure.

Aero-Spa® delivers five times the oxidizing power of a built-in Ozone generator.

Here's the cool thing about Ozone: it's very unstable, meaning that it will release the extra oxygen molecule in a burst of energy as soon as comes into contact with another substance . . . such as the organic solids suspended in your hot tub. Ozone, a powerful oxidizer, destroys the cell walls of organic material on contact.

Conversely, you set the timer on the Aero-Spa so that the unit runs during off hours. As a result, the Aero-Spa will produce five times the cleaning action.

After Aero-Spa shuts off, just wait 20 minutes for the Ozone to dissipate before using your hot tub. This gives the unstable Ozone molecules time to collide with other molecules and convert back to regular oxygen (that said, do not breathe the concentrated Ozone).





Ozone attacks and destroys organic compounds — primary causes of cloudy water and foam — whether they're from lake water, soap, sweat or cosmetics. Instead of chemicals, Ozone will become the primary defense against cloudy water, foaming, bacteria, and foul chemical odors.

Because the Aero-Spa will do the bulk of the work, you can reduce the amount of residual chlorine in the water to 1 – 2 PPM. Anything you can do to reduce chlorine or other residual sanitizers simplifies hot tub maintenance. Further, hot tub water becomes more stable with less chlorine. Even better, by investing in Aero-Spa, you can reduce swimwear fading, chloramine odors and eye and skin irritation

(which may be especially helpful if you have eczema, as bromine and/or chlorine can cause flare ups).

Remember, the Aero-Spa system can be installed in minutes without tools. For less than your annual chemical costs, the Aero-Spa system can keep your hot tub honeymoon going for the life of your spa!

We offer a Risk-Free 90-day trial. If you are not impressed with the Aero-Spa, just return the product for a full refund!

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