

# CAT Controller Courier # 34

July 2009

## Dear CAT Customers,

CAT Controllers, Inc. would like to wish all of you a Happy and Safe 4th of July weekend. Holidays can sometimes be celebrated for reasons other than the one reason in which the holiday was established. Remember this 4th of July that we are celebrating our Independence and the men and women who fight for that every day. Try to make an effort to thank your fellow Americans that are or were in the military. Try and make an effort to be thankful for what we have as Americans who live in a wonderful and free nation. This 4th of July put aside the economic times, put aside the negative thoughts you may have regarding religion & politics, or just don't watch the six o'clock news this 4th :). Think and remember the positive things in life, family, friends, freedom, and love! Have a Happy 4th of July to all of you and GOD BLESS the United States of America.

## Will Calcium Hardness Affect My ORP?

We here at CAT Controllers are asked many questions on a daily basis regarding what does and what does not affect our chlorine activity. Within the past few months we have had clients with this same concern, "How does Calcium Hardness affect my chlorine activity?" Well, I come to you with good news. Calcium Hardness has absolutely no effect on your chlorine activity. Now let me attempt to explain why, without being too technical. Lets first start by discussing what Calcium Harness is.

As defined by the NSPF, Calcium Hardness is the calcium portion of the total hardness. It is the measurement of the amount of dissolved calcium in your water. Hard water is defined by high amounts of calcium in the water, over 400ppm. Soft water is defined by low amounts of calcium in water, fewer than 200ppm. When you have high calcium levels in your pool water it can contribute to scaling and calcium build up/calcium deposits, which can inhibit filtration, circulation, and heater efficiency [due to scale formation on heating elements]. When you have low calcium levels in your pool it can promote corrosion of plaster surfaces, where you may see etching of the pool surfaces.

Calcium is found as a positively charged substance (an ion) in water and is very stable. In other words,  $\text{Ca}^{2+}$  does not react with  $\text{HOCl}$  or  $\text{-OCl}$  because  $\text{Ca}^{2+}$  does not give or take electrons. In Layman's terms these ions in water leave each other alone. Therefore, the Calcium Hardness of your water has no effect on your chlorine activity or ORP.

This does not mean it is okay to ignore your calcium levels. Calcium will indirectly affect your chemical makeup of the water by either slowing down the filtration and circulation process consequently not allowing for the proper distribution of chlorine throughout the pool. Or, it may promote the etching of the pool surfaces, which can create sites for algae growth or staining. In conclusion, you must absolutely pay attention and ideally keep your Calcium Hardness levels between 200ppm and 400ppm in your pool, but remember that your calcium levels do not have a direct effect on your ORP!

I would like to thank Thomas Lachocki, Ph.D. for his consultative help and for editing this piece.

Written By:

M. Troy McGinty  
CAT Controllers, Inc.

### **Water Balance and Your Controller!**

85% of inbound troubleshooting calls to CAT are water chemistry related. We all know that every pool has a different water chemistry makeup dependent on the pool surface material and age, piping material, fill-water chemistry, sanitizer and pH maintenance products, etc. What many customers do not understand is that maintaining proper water balance is critical to achieving successful pH/ORP automation. Attention to the following key elements of water balance will allow your controllers to maintain optimal water chemistry.

#### pH

Properly balanced pH is the most important part of your water make up. An ideal pH 7.4-7.6 will help to make sure that your chlorine is working at its full potential; your pool equipment is not in danger of corrosion or scaling and insures bather comfort.

*Regarding Controllers* Make sure pH is at an ideal level because your ORP reading depends on whether or not you have a balanced pH. High pH = lower ORP. Low pH = higher ORP.

#### Free Available Chlorine (FAC)

Maintaining free chlorine at the proper level is very important for the safety and hygiene of bathers as well as the pool surface & equipment. FAC is the active disinfectant in the pool and needs to be maintained as specified by Health Department standards. Industry ideal PPM of FAC is 2-4 ppm for pools and 3-5 ppm for spas (depending on your sanitation method).

*Regarding Controllers* Make sure your chlorine level is where you would like it to be at the time that you select your ORP Setpoint. There is no direct correlation between FAC and ORP. The controller (if your water is balanced correctly) will attempt to hold your FAC level by feeding the proper amount of balancing chemicals to maintain the ORP and pH setpoints which in turn will hold your FAC level.

### Total Alkalinity (TA)

Maintaining proper TA in your pool/spa is more important than many people understand. Consider TA to be a measure of the water's ability to provide a pH buffer. Failure to maintain TA within the ideal ranges of 80-120 ppm can allow dramatic swings in pH.

*Regarding Controllers* If TA is below 80 ppm you may start to see drastic fluctuations in pH and you will not have the ability to steady it out. If your TA is too high your controller will not be able to change the pH no matter how much acid it feeds. Be sure to keep the ideal level of TA so that your controller can balance your pH accordingly.

### Total Dissolved Solids (TDS)

TDS is a factor that is quite frequently ignored. High TDS may lessen the disinfectant's ability to oxidize contaminants. We need to be sure that we keep our TDS below the suggested 1500 ppm above your start up/fill water. Once we start getting into higher levels you may see problems in water chemistry.

*Regarding Controllers* The higher your TDS the lower your ORP will be. If there is a lot of extra matter in the pool the chlorine activity will slow. Remember "FREE" "ACTIVE" the less matter in the water to have to attempt to oxidize the more effective it will be, resulting in a higher ORP.

### Cyanuric Acid (CYA)

Though this chemical can only be introduced manually by us, we must be sure to keep it under control. The use of Cyanuric acid is very much important to outdoor pools that receive a lot of sun to help keep the disinfectant in the water. However, if we add too much Cyanuric Acid we will decrease the activity of our disinfectant. It is important that we are sure to keep our CYA below 50 ppm in our pool at any one time.

*Regarding Controllers* Any amount of Cyanuric acid will decrease your disinfectant's ability to oxidize dramatically during the day, in turn giving you a lower ORP. We must be sure to keep our levels of Cyanuric down so we can keep a high enough ORP reading so that we know our water is safe.

Remember folks there are many other things that will affect your water chemistry and your controller's ability to work correctly. Please contact Robert Legaspi at 1-800-657-2287 with any questions or concerns you may have about your water chemistry or your controllers. For more information on any of these subjects talked about in this article please contact Troy McGinty.

Written By:

Troy McGinty  
CAT Controllers, Inc.

## **GREAT NEW STRATUM VRS PRICE**

The Virginia Graeme Baker Act is still in effect and the CPSC is enforcing this mandate! Please remember to get your pools up to code ASAP!

In an effort to provide increased profit for your business, CAT Controllers has lowered the Hayward Stratum VRS price for our dealers. Please contact your CAT sales representative to find out your NEW Stratum Price!

## **CAT 1 Stop Shop Promo!**

CAT Controllers is offering its annual 1 Stop Shop Promo! Purchase a CAT 2000 Professional Package, 1 Variable Output Stenner Pump/15 Gallon Vat Combo, 1 Variable Output Stenner Pump/30 Gallon Vat Combo all for \$2000.00 CALL RIGHT NOW 1-800-657-2287!

I would personally like to wish everyone a Happy 4th of July. I hope you enjoyed this month's CAT Courier. Please provide me with any new article ideas, suggestions, and/or a nicely written testimonial for CAT Controllers, Inc. Please let me know if there is anything CAT or I can do for you. Have a wonderful July!

Sincerely,

Troy McGinty  
CAT Controllers, Inc.