

CAT Controller Courier # 24

September 2008

The Harmfulness of Combined Chlorine / Chloramines

By definition Combined Chlorine and Chloramines are the same. Combined Chlorine forms when free chlorine chemically bonds to ammonia (urine and/or sweat) or carbon-containing nitrogen compounds such as proteins, amino acids, dead algae, etc. NSPF guidelines states that the ideal residual range for combined chlorine is 0 and the max is 0.2ppm in a pool and 0.5 in a spa. Once the bond has taken place we then refer to the substances as chloramines. Chloramines have three stages. During the inorganic chloramines stage it is known as monochloramine which is the least harmful and is actually a useful disinfectant. As the amount of ammonia increases the more harmful irritating substances begin to form, which are the second and third stages known as dichloramine and nitrogen trichloride (trichloramine). These substances are what will tend to irritate the eyes and mucus membranes. These substances, especially trichloramine, also affect the air quality with indoor facilities, which will give off a very strong chlorine-like odor that irritates the respiratory system and may even promote asthma. "There is evidence that states that disinfectant by products such as chloramines will increase respiratory problems such as Asthma." Says Ernest R. Blactchley III, Ph.D.,P.E., DEE, Purdue University. "Recently James E. Potts of the University of British Columbia, Canada has completed a Ph. D. Thesis with the title: Adverse Respiratory Health Effects of Competitive Swimming: The prevalence of Symptoms, Illnesses, and Bronchial Responsiveness to Metacholine and Exercise'. His work shows that low level exposure to the chemical substances produced by chlorine disinfection of the pool water may be responsible for the development of asthmatic symptoms in competitive swimmers." (Elements of Literature Review: 1996) Though it could be argued that these studies are incorrect and that other studies show that indoor air quality, due to high chloramines, is not athsmagenic, it cannot be disputed that high combined chlorine is only a negative regarding the operation of a pool and could potentially be dangerous for swimmers.

Now that we know what Chloramines are, what causes Chloramines, and why Chloramines are harmful, let me point out a few ways to prevent it. "Chronic chloramines and the associated smell and irritation are caused by a variety of factors. Despite what many swimmers assume, the major cause of this problem is too little free chlorine rather than too much." (Griffiths, Tom Ed.D., "Clearing the Air: Chloramine Control for Indoor Swimming Pools." Water Quality & Health 2008) Many avoid keeping their free available chlorine levels higher than 2.0ppm or 3.0ppm, if your county and/or state code allows, holding your FAC level in your pool at 4.0ppm with a 7.5pH, you may be able to hold off inevitably forming inorganic chloramines.

As we all know free chlorine (HOCl) is the active chlorine, which in a pool is used to effectively oxidize natural waste products from swimmers such as urine, sweat, oils, etc. These contaminants contain nitrogen atoms that will react with free chlorine to create organic chloramines. Unfortunately, organic chloramines are not readily destroyed by chlorine. This is why we often see some combined chlorine (organic chloramines) even after inorganic chloramines are destroyed by breakpoint chlorination of other oxidizers. Partial water replacement remains an effective way to remove organic chloramines from water. Other oxidizers like ozone and UV may also help.

Some other ways that encourage or contribute to the reduction and/or prevention of chloramines is the use of supplementary oxidizers: Salt Chlorine Generation Systems, Ozone, (UV) light, etc. "Chlorine reaction with bather sweat, waste, etc. which typically results in combined chlorine (chloramines) as it cycles through the cell, reaches breakpoint chlorination to virtually eliminate the negative effects of chloramines. The result is better water quality and air quality." (Assam, Sean, "Salt Chlorine Generators What's all the Buzz About?" The Edge July 2008: 32-34) All of these systems have been proven and used one time or another in the reduction of chloramines from commercial pool and spa applications. However, remember what we have learned today, the primary cause of inorganic chloramines is simply the lack of free available chlorine. So automate your pools, keep higher chlorine residuals with good effective ORP levels, keep a balanced pH and you will notice a significant reduction in combined chlorine, bad chlorine smells, slime water and the amount of times you will need to shock your pool.

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CAT Does it All

CAT Controllers has consistently asked "What can CAT do for you?" To live up to this maxim we have set goals to make our product line diverse enough to satisfy every application CAT 1000 Single Channel - CAT Controllers, Inc. recognizes the need for residential pools to automate the control of their pH. Builders can now protect the pool surface during the critical curing stage while adding longtime value and convenience to their customers. With the increasing demand for salt chlorine generation one must realize that home owners want less to do with maintaining their pool water chemistry. The CAT 1000, in salt applications, will also assist in quicker startup and more effective sanitation.

CAT 2000 ProPack - Is engineered for value and ease of use. Beginning with the moment you open the box you will notice the controller is pre-mounted on a white PVC backboard, complete with machined acrylic flow cell with rotary flow sensor as well as all the tubing and fittings you need to complete the installation. Great for any application, from the everyday residential pool to a high end commercial spa.

CAT 4000 - Is the first Wireless Web based chemical controller. Using a lot of advanced technology we make complete 2-way communications as easy as plugging in the controller and launching a web browser. Forget about the need for flaky phone lines, modems, and PC based software. The CAT 4000 is the simple answer to for data logging, remote control, and alarm notifications. This controller is beneficial to every market especially the Hotels, Motels, Home Owner Associations, and Community pools.

CAT 5000 - Is ideal for higher end facilities and the specification market. This unit does it all and communicates anywhere on the planet via direct to satellite wireless. CAT Controllers asks you to please consider all of these options when speaking with your existing customers and while designing future projects. CAT wants to provide what is best for you and your customers.

2008 PIE Show

CAT Controllers invites you to join them at this year's PIE Show located in Monterey, CA at the Portola Plaza Hotel, October 2nd thru October 4th 2008. Please visit the CAT Controllers Team at booth # 413. CAT Controllers will also be hosting a CAT Controller training seminar at the Portola Hotel on October 1st from 9:00am until 5:00pm. Please Contact Paul Hammond at 800-657-2287 for details.

Lastly, CAT Controllers own Troy McGinty will be speaking at the show at 8:00am on Saturday, October 4th in Bonsai Room # 2 about the 2008 industry economy, going green, and how these topics relate to pH and ORP Automation. We hope to see you there. For more details on the show visit the website www.poolindustryexpo.com.

CAT Offers Training In Vegas

CAT Controllers will be providing a FREE full day of CAT controller training at the Holiday Inn Express Las Vegas South on November 17th, 2008 from 9:00am until 5:00pm. Cat will be training on the entire CAT Product Line of Automated Chemical Controllers, the Poolcomm Website, and new Industry Trends. Lunch will be catered and provided by CAT Controllers. Please join us at this educational event prior to the National Pool and Spa Expo. For more information or to reserve your spot contact Troy McGinty at 1-800-657-2287 or click the below link to email your reservation. We hope to see you there.
mtmcginty@chemauto.com

CAT Controller and CPO Training Schedule 2008

Please review the following training agenda and select the dates you wish to attend: put the number of employees that will be attending and which date on a fax cover page and/or email then send it off to 301-838-4007 or mtmcginty@chemauto.com.

Friday September 12, 2008 (Dealer)
Thursday October 9, 2008 (CPO Fusion)
Friday October 10, 2008 (Dealer)
Friday November 14, 2008 (Dealer)
Thursday December 11, 2008 (CPO Fusion)
Friday December 12, 2008 (Dealer)

Please take notice of the CPO Fusion Classes. Contact Troy McGinty at CAT to request your CPO Primer Online Code and finish your first day of CPO class on-line. After finishing the online portion of the CPO class, pick one of the above dates to complete your CPO Course and follow it up the next day with a full CAT Dealer Training.

CPO Fusion Classes are not mandatory and anyone is welcome to come to our CAT Dealer Training.

Please indicate the number of individuals from your company who will be attending and fax the confirmation to 301-838-4007. We will limit each session to 10-12 persons to insure the best training experience for all. Upon receipt of your fax, we will send you a confirmation with travel information on all Washington area airports, ground transportation, and hotel accommodations.

Friday Dealer Training Agenda

9:00 Welcome Breakfast with Coffee, Juice and Danish
9:30 Advanced Water Chemistry and the ORP Method
10:30 CAT 2000 Series microprocessor based controllers
11:30 Selecting the proper Chemical Feed Equipment and Accessories
12:30 Catered Lunch
1:30 CAT 4000 Wireless Web Based Controller
2:00 CAT 5000 and Satellite Based Wireless
2:30 Sales Strategies and Water Quality Management Programs
3:30 Troubleshooting
4:00 Dealer input and feedback on existing controllers and future improvements

CALL TO REQUEST CPO FUSION AGENDA

I hope you all enjoyed the September Newsletter and please contact me with any questions, concerns and/or ideas. I would like to extend a special thanks to Tom Lachoki for his input and advice with the Harmfulness of Combined Chlorine article. Thanks Tom.

Sincerely,
Troy McGinty
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