



A short and friendly reminder about indoor swim meets and water/air quality.....

The first and foremost principle pertaining to good air quality is: THE WATER QUALITY has to be correct. 99% of the problems that are tagged as air quality are caused by chloramines or other contaminants in the water. Until this water problem is solved, the air problem will remain. Treating the air first is like trying to treat the smoke before putting out the fire. STEP 1. DO the actual test don't just look at the pool log sheets and assume they are correct.

There is a standard water test that every commercial pool test kit can do. It is number 3 solution in the Taylor test kit.



After testing for pH and free Chlorine the total or combined Chlorine needs to be tested – 3 times a day minimum.

There are a few opinions as to what is the “safe level” of combined chlorine (chloramines) in the pool water. Our opinion is that if there is a perceptible change in the color when the #3 drops are added, you have a problem. Most “big fires” started as “little fires” so correct the problem before it gets out-of-hand.

Chloramine formation can be accelerated by:

1. Swimmers not properly showering before entering pool.
2. People using the pool rather than getting out and going to the restroom.
3. People doing a high level of aerobic activity and sweating in the water. (*everyone sweats in the water – the same as if they were doing exercise on land*) This can be exasperated during large swim meets when swimmers get in water with no showers and then don't get out and use the bathroom.
4. Residues from ammonia or nitrogen based cleaning products that are used on decks or in shower rooms/lavatories.
5. Residues from fertilizers used on landscaping (*nitrogen based*) that get tracked into building on everyone's shoes.
6. Poor air circulation and lack of fresh air introduction into the pool building.
7. Over-use of “shocking” the pool for maintenance purposes. The pool should not be shocked before or during meets. In fact current research shows using a chlorine based shock should only happen if there is an identifiable bacteria problem.
8. Improper use of certain brands of chemicals not suitable for conditions specific to a geographic area.
9. The source water (*city water*) being treated with chloramines rather than chlorine. This is becoming more prevalent. This is a data base that may help you find out if your city uses chloramines.

<http://www.bulkreefsupply.com/chloramines-database>

Solutions and Prevention: Almost always more than one thing needs to be changed to alleviate the problem. Successful solutions working hand-in-hand are

1. Have your staff attempt to get the users of the pool to take showers before entering – this is usually required by state health codes but for some reason people have started ignoring the codes. They are there for a really good reason. Minimum 16 second warm shower including hair.
2. Educate coaches – swimmers – pool staff – parents – that it is not only unsanitary to pee in the pool but that it can quickly affect water chemistry. Research shows one person peeing in the pool can adversely affect 10,000 gallons of pool water for 9 days.
3. Consider installing a medium pressure Ultra Violet (UV) water treatment system that cuts down on the amount of chlorine you have to use and also “breaks down” mono and di and tri chloramines.
4. Evaluate the type and brands of chemicals being used to treat the pool water for both chlorine and pH control
5. Evaluate the pool filtration system to see if a filter that filters down to a more effective micron rating (like DE at 4 microns) would help.
6. Check the labels on all cleaning products to make sure they do not contain ammonia or are not nitrogen enriched.
7. Make sure the pool is not being shocked on a regular schedule just because someone thought it was the best thing to do.
8. If the source water has chloramines, install and activated carbon filter on the pool fresh water fill line. This will remove chloramines.
9. Evaluate the air circulation system and possibly include more fresh air introduction and better turnover or more efficient closed system circulation and dehumidification. Things to consider.....
 - a. The amount of fresh air that is being introduced into the building every hour. . This is totally dependent on outdoor climate and type of building. A 90% change of air every 20-25 minutes works well in warm areas.
 - b. The condition of the air handling equipment filters. The filters should be cleaned or changed every 3 months. There are micro-filters that filter out more air-borne contaminates than the standard fiberglass or paper filters.
 - c. The type of air handling system you have and is it regularly serviced and working properly? Routine maintenance must be done and tracked on all pieces of air handling equipment. Vents and louvers must be checked and lubed at least 4 times a year to make sure they are working properly. Dust must be removed from surface of vents. Motor belts and fuses also need to be checked.
 - d. The air flow across the surface of pool and the amount of air being exhausted from the pool room. If the sizing of the HVAC system or the duct design was not engineered correctly, there are retrofits and new technologies that can help correct the under-design of the original equipment. These are stand alone units with air flow in gutters or benches.

AND – if the pool will be hosting a meet where a lot of swimmers will be using the pool, we recommend:

- **Pre meet** – the week prior to the meet - make sure the pool you are using has had no recent air quality issues and that they know their HVAC equipment has been recently inspected and properly maintained. This includes air filters, belts, and motors, vent louvers, etc. Make sure if the HVAC is automated that it is set for high capacity for the meet days.
- **Pre meet** – the week prior to the meet - make sure the pool logs for water quality have been properly filled out. Water quality problems rarely happen overnight (except with 500 swimmers using pool all the same day). The 4 main things you are looking for on the log sheets are: Free Chlorine readings (2.0 to 2.5), pH readings (7.3 to 7.5), Combined Chlorine readings (0.0 to 0.1), filter backwash (cleaning) cycles (how often). Even though many codes state .02 combined chlorine reading is acceptable – it isn't.
- The COP (Certified Pool Operator) should NOT shock the pool before or during the meet. This accelerates the formation of chloramines regardless of published information to the contrary.
- Almost every indoor pool needs a medium pressure UV water treatment system to have a chance for good quality air during a large meet. The UV bulbs have an effective life expectancy and after 8 months or so they may have lost some efficiency. Check the UV to make sure it is operating at peak efficiency.
- Make sure the meet host has a plan for keeping spectators in the appropriate areas and off the deck plus monitoring all areas in the facility for safety.

For more detailed information on any part of this please e- mail Mick Nelson mnelson@usaswimming.org