

# Potomac Valley Swimming



OFFICIAL'S NEWS MAGAZINE



VOL XI, NUMBER 1

*"Si dubium, fidem athletam"*

FEBRUARY, 2018



*Will I. Cheatum of Dewey, Cheatum and Howe cross-examines Ms. Cammy Kell during day four of the proceedings. (drawing by Anne R. Teest)*

## IM Xtreme(ly) Successful

**By Scott Witkin**

COLLEGE PARK - IM Extreme is a swimming competition that gives USA-S athlete members a venue to compare themselves against swimmers all across the nation. They promote and reward a swimmer's versatility as swimmers must compete in all IMX events in their age group.

Scheduled in several regions of the US throughout the year, the 2018 Northeast IMX Games were held at the University of Maryland on January 26-28, 2018. The Northeast meet has proven to be very popular over the years and this year's meet was no exception. Not only are swimmers offered the opportunity to compete against their peers from different LSCs, it offers coaches and officials an occasion to meet their counterparts and enjoy an exchange of camaraderie and knowledge.

This year's meet combined 1192 athletes from ten LSCs in competition. With 121 heats of 500 Free and thirty-six heats for each women's event, not to mention a packed audience gallery, the high level of excitement was evident. Of course, the event could not have functioned without the tireless efforts of the eighty-nine

*(Please see [IMX](#), page 6)*

## C.H. LORINE FOUND 'NOT GUILTY' IN SWIMMING VENUE ASSAULT

POTOMAC VALLEY - Burning eyes, runny nose, itchy skin, coughing, asthma attacks, "allergic reactions", and an acrid taste in the mouth; all have these have been attributed as an assault by chlorine on the human body. As many swimmers and officials know from hours spent on the deck, by day three or four of a competition, our respiratory tracts have endured significant stress sometimes requiring up to three or more days to clear.

Is chlorine really the guilty party in causing the "bad air" at a pool venue? The answer is not what most people believe.

There are three forms of chlorine used in pool environments. The first is "liquid chlorine". The majority of commercial and large scale pools use this form of the chemical. Formally known as sodium hypochlorite (NaOCl), solutions are created by bubbling the compound through caustic soda to produce hypochlorous acid in situ.

The second and most effective disinfectant form of chlorine is chlorine dioxide (ClO<sub>2</sub>). A gas, which is also bubbled through caustic soda to form hypochlorous acid, cannot feasibly be commercially shipped as it becomes highly explosive when stored under pressure. Chlorine dioxide must be made on site requiring very expensive equipment, safety gear, and highly trained operators. Typically this type of set-up is reserved for pools totaling a million gallons or more, as a bleaching agent to make paper white, and to purify drinking water at public water utilities.

Residential pools that use chlorine employ calcium hypochlorite (Ca(ClO)<sub>2</sub>) as the sanitizing agent (there also exists bromine and lithium based chlorine compounds, and the increasing

*(Please see [Assault](#), page 9)*

## OFFICIAL'S INSTRUCTION

**Jack's Corner**

## Guidance for Officials

By Jack Neill

The disqualification of an athlete from an event is a normal and necessary part of swimming. It lurks behind every start, turn, kick, and stroke. Occurring at mini meets, the Olympics, and everything in between, it can result in tears, anger, disbelief, or acceptance.

Swimmers and their parents may not believe it, but there is not a single official who enjoys disqualifying a swimmer. We probably hate it more than the swimmer does. We don't like to make swimmers cry or ruin their drive home. But it's not fair to the swimmer who swam the stroke properly to have to compete against someone who didn't. A disqualification is about fairness and the integrity of the sport.

Most swimmers are disqualified at some point in their swimming career. I've been on deck at a meet when two Olympic medal winners were disqualified, one of them twice. Like many officials, I've had to raise my hand while judging my own child—18 years later she still reminds me of that experience.

When an athlete in football violates a rule, the team is penalized a few yards. When an athlete in basketball violates a rule, the opponent is given a free throw or two, but when a swimmer violates a rule, he or she is removed from the event and their time is not recorded. It's as if the swimmer did not exist. That's a pretty serious penalty.

At most of our meets, there are three people involved with each disqualification. The S&T Judge makes a call only when they are absolutely certain that a violation occurred, and always giving the swimmer the benefit of the doubt. It should never be "I think I saw." The Chief Judge vets the call and, customarily asks some

questions, not in an effort to dispute the Judge, but rather to clarify and verify that an infraction has indeed occurred. The Deck Referee is the swimmer's last line of defense and the one who ultimately makes the decision whether or not to accept the disqualification. Considering the severity of the penalty, these three officials must be in agreement.

Our aim is for all of our deck officials to have a thorough knowledge of the rules and the ability to apply them fairly and consistently. While we're never pleased about raising our hand for a disqualification, we recognize that it's an "essential part of swimming." 🙄

## Could It Be Any More Difficult?

COLLEGE PARK – As if parking weren't convoluted enough at the University of Maryland College Park campus, the pay station meters used for such lots as Stadium Garage (SDG) are not intuitive as to their use.

Of the odd behaviors these machines exhibit, the first of which is that time cannot be added to a car already in a metered space. This is a feature found on nearly every parking meter in existence; except at the University.

(Please see [METERS](#), page 3)



→ During the swim portion of a breaststroke heat, the S&T official with jurisdiction signals a DQ. When queried, the S&T indicates that the elbows of the swimmer did not remain submerged during the backwards pull. Should the swimmer be disqualified?

→ At the 175 yard turn of the 200 yard butterfly, a swimmer, realizing how tired he is, legally touches the wall with two hands, stops, stands on the bottom, and pushes off the wall on the breast a few seconds later. Should he be disqualified? 🙄

(Please see [Answers](#) on page 4)

## What's With All the Whistles?

By Tom Taylor

The weekend of January 26<sup>th</sup> saw the completion of the IM Extreme meet at the University of Maryland. This amazing venue hosted nearly a dozen LSCs comprising over a thousand swimmers. As with most meets of this size and complexity, there did seem to be one aspect that was problematic. This involved the swimmers taking to the blocks before the appropriate time. This resulted in delays and potential risks to the swimmers (as climbing *down* is not an exercise for which those blocks were designed). Swimmers, coaches, and sometimes even officials, should be reminded that the whistle signals issued by the referee indicate an action to be taken and, if they are followed, the meet will flow in a more orderly and safe manner.

Before each heat of a forward starting event, the referee issues four or more short whistles (sometimes called "chirps".) These inform the swimmer that their heat is about to start and that it's time to put on the gear and be prepared to climb up on the block. At this juncture, if the meet does not have a dedicated announcer, the starter will call out the heat (and the event if it's the first heat.) The referee then blows a single long whistle. This signal is the invitation for the swimmers to step up onto the block and be prepared to follow the "take your mark" instruction from the starter.

For heats with in-water starts, the process is similar, but a whistle signal is added to the protocol. The referee issues what will be the first of two long whistles. The first signal invites the swimmer to enter the pool; the second one's intention is to bring them to the wall and become prepared to start the heat.

At swim meets hosting younger swimmers (10 and under,) knowledge of this whistle protocol can save a lot of time as frequently the swimmers on deck are reluctant to be the first to jump into the pool.

At some pool venues in Potomac Valley, certified officials hold "Whistle Clinics" for their swim groups at the beginning of both the fall and spring seasons. The official, using a whistle and a starting device, explains the whistle order to the athletes and, then for about half an hour or so, practices with them such that they can become accustomed to the different whistles and their meaning.

The official' committee may want to reach out to coaches to see if there is an interest in holding one of these whistle clinics at their own pool.

Besides improving the meet pace and increasing athlete safety, the knowledge of correct whistle protocol behavior has a calming effect on the swimmers as it's one less thing for them to worry about.

Last, but not least, special kudos should go out to the Meet Referee, Scott Witkin, who – due to there being more girl swimmers than boy swimmers - shifted the final six girls' heats of each event to the boys' pool so that both pools would finish at the same time. This action, referred to as "*The Witkin Maneuver*," saved a ton of time and allowed for the entire session to end earlier. 🙏

### *Meters*

*(Continued from Page TWO)*

If you're at Eppely and, the meet runs long, returning to the meter to add "coins" as it were isn't an option. The meter believes a new car has been parked and sets the time countdown from the moment money is added, not added to the original time that was paid for.

Most of us know that parking meters don't give change, but did you know that if you cancel a cash transaction before completing it, your money is still kept, then you are given a slip of paper that you must present to Transportation Services to claim your refund? How convenient. Where is Transportation Services anyway?

And maybe most confusing of all, is that the meter advertises that time can be bought in fifteen minute intervals, but blocks the selection to only full hours. 🙏

## LETTERS TO THE EDITOR

**SPENDING THAT HOLIDAY CASH**

Happy New Year All!

Now that the holidays are done, maybe it's time to buy something new for yourself (or for one of your official friends...) Your PVS Officials' Committee has been working with a vendor to create a brand new PVS Official's clothing line, complete with the PVS logo. Available for purchase are white polos (short and long-sleeved, with the option for personalization with your name), sweats and fleece, caps, and even blue oxford shirts for our championship meets! Here is the link -

<https://www.companycasuals.com/PVSOfficial>

Hopefully the site is self-explanatory. If you have any questions, please feel free to text or email our vendor, Vicki. She is amazing and responsive! And if there are other items you would like to see available for purchase, please let either Vicki or me know.

Thanks to Lynne Gerlach and her leadership on this issue! Have fun shopping!

-Barb Ship

**WORKSHOP AND DINNER**

On Friday, Feb 16th, the PVS Diversity & Inclusion Committee is sponsoring a Workshop and Dinner with guest speaker Cecil Gordon. Mr. Gordon will be the Honoree of the 32nd Annual Black Invitational Swim Meet. If you would like to attend the workshop and dinner, please RSVP. The workshop is open to all PVS Officials. Please [CLICK HERE](#) for details.

-Merari Chollette

**CONGRATS**

Read the last PVS news magazine over my lunch break. Congrats and thanks for an entertaining read. See you on deck.

-Tom Allison

**WORKED FOR ME**

I didn't use any devices other than my computer to view the news magazine and it looked great. Also, I very much found the content to be enjoyable and informing.

-Sheila Vidal

**MORE ON MARYLAND**

The most disturbing news was the article about the parking situation at the University of Maryland. It's nice to have tennis courts, but what's the point if you can't park to play? Or swim?

-Arvydas Barzdukas

**YOU MAKE THE CALL (ANSWERS)**

**Breaststroke call** – No. The interpretation of Article 101.2 dated August 2015, declares that in June, 1995, the USA-S Rules & Regulations Committee clarified that in conformance with FINA's intent, the requirement for the elbows to remain under water on the breaststroke applies only to the recovery (forward) portion of the arm stroke, not to the backwards pull.

**Butterfly call** -No. The rule states, "Once a touch has been made, the swimmer may turn in any manner desired. The shoulders must be at or past vertical toward the breast when the swimmer leaves the wall." Nothing that the swimmer did violated this rule. 😊

**Know Your Rule Book**

*"Does the new interpretation of how a swimmer leaves the wall in medley swimming apply to the Freestyle intermediate turns in the Individual Medley and Medley Relay?"*

The 2017 revised rule applies to the transitional turn from Breaststroke to Freestyle as well as the intermediate turns during the Freestyle leg of the Individual Medley or Medley Relay. 😊

PVS



**25 Years of Service to PVS**

JANUARY: Kurt Thiel (NCAP)

**10 Years of Service to PVS**

JANUARY: John Kost (PM)  
Charles Lundy (AAC)  
Hope Oehler (MSSC)

FEBRUARY: Cherlynn Venit (PAC)

**5 Years of Service to PVS**

JANUARY: David Bixler (RMSC)  
Susan Buda (MSSC)  
Dave Charbonneau (MAKO)  
Dorothy Curran (SNOW)  
Valerie Denizard (SNOW)  
Tertius Eksteen (NCAP)  
JC French (DCPR)  
Paul Jampole (NCAP)  
Ann Kuhlkin (NCAP)

FEBRUARY: Scott Christofferson (MACH)  
Bruce Gilbert (CSC)  
Kristian Greene (MACH)  
Cara Meilus (MACH)  
Michael Rosman (ASA)  
Erica Silberstein (TOLL)



**Data Provided by Kelly Rowell and Lynne Gerlach**

**Stroke & Turn Judges**

William Alms (FISH)	Brandon Averill (RMSC)
Betsy Bajwa (TOLL)	Katie Blot (NCAP)
TR Buchanan (NCAP)	Michelle Chan (BWST)
Kisha Clark (DCPR)	Sean Conroy (AAC)
Christopher Devlin (MAKO)	Kelly Dobrydney (MAKO)
Ed Dohler (RMSC)	Christopher Egan (DCPR)
Timothy Finn (ASA)	Somiranjana Ghosh (RMSC)
Kim Groves (ASA)	Akniyet Imambekov (MAKO)
Steve Johnson (TIBU)	Ethan Karp (ASA)
Michael Lasut (SDS)	Wayne Leach (NCAP)
Maria Mascitti (RMSC)	Frederick Orndorff (OCCS)
Marie Sardelli (OCCS)	Pete Schiefelbein (NCAP)
Kara Schmid (RMSC)	Bryant Tolar (OCCS)
Cynthia Turner (LIFE)	Anthony Van Ess (BWST)
Kymerly Wampler (PAC)	

**Chief Judges**

Rebecca Fayed (ASA)	Otto Gerstl (NCAP)
David Hofmann (ASA)	Mark Overend (MACH)
Frank Raines (RMSC)	Pete Schiefelbein (NCAP)
Ernesto Solana (ASA)	Jorge Zamora (OCCS)

**Starter**

Kerry Chmielenski (NCAP)	Patrick Donahue (ASA)
Dianne Fiedler (OCCS)	Jim Newland Jr (OCCS)
Pat Walsh (NCAP)	

**Deck Referee**

Travis Blake (OCCS)	Matt James (RMSC)
Tony Knick (NCAP)	Ed Mullen (NCAP)
Hope Oehler (MSSC)	Joe Tiago (TANK)

**Administrative Official**

Courtney Johnston (MACH)

**HyTek Operator**

Nigist Mekonnen (DCPR)      Marianne Sullivan (NCAP)

**ETS Operator**

Steve Kaiser (RMSC)	Eric Ramey (SNOW)
Jeffrey Wolff (MAKO)	KT Zamora (OCCS)



PVS Officials with 50+ Sessions at PVS Meets in 2017

Tom Allison (TIBU)	Christa Krukiel (RMSC)
Spencer Quinn (NCAP)	Eric Ramey (SNOW)
Mohamed Chouikha (DCPR)	Karyn McCannon (UN)
Scott Christofferson (MACH)	Tukkie McMillan (FISH)
Kelly Rowell (HACC)	Ellen Colket (MACH)
Kim McMillen (NCAP)	Mike Rubin (SDS)
Nathan Dean (FISH)	Rich McMillen (NCAP)
Dean Schroeder (OCCS)	Vycke Horback (NCAP)
Mila Mladenovic (AAC)	Barbara Ship (RMSC)
Tim Husson (UN)	Ray Nash (NCAP)
Courtney Johnston (MACH)	Robert Stevens (OCCS)
Jack Neill (UN)	Steve Strazza (MACH)
John Kost (PM)	Suey Nordberg (OCCS)
Jan van Nimwegen (SNOW)	Carolyn Kotarski (YORK)
Kelly Opipari (ASA)	Scott Witkin (RMSC)

## CONTINUUM

**IMX***(continued from Page One)*

officials who worked the five sessions over three days.

Many have asked: how does IMX work? It is a virtual competition system using Power Points. The points scale is from one to eleven hundred with assigned values determined by event swimming times within an age group. The higher the points, the stronger that swimmer is in that



This year's full IMX house at the Eppely Natatorium.

particular event. USA-S provides a calculator for determining the point values of a swim on their website. For this year's competition, a swimmer would have needed to achieve 1800 points to qualify as an entrant in the IMX Games.

After each session on Sunday, an awards ceremony was held and plaques were given to the top sixteen finishers (by points earned) within each age and gender.

Congratulations are in order for Gabi Abruzzo (PWAC-MA, age 9), Emily Herr (TVSC-MR, age 10), Caitlin Horning (DST-MA, age 11), Lainey Nullins (SSC-MA, age 12), Jordan Durocher (NCAP-PV, age 13), and Meghan Lynch (GYWD-CT, age 14) for being the top finishers in the women's pentathlon, with Aiden Moran (CLSC-NI, age 9), Joseph Warnagiris (WST-VA, age 10), Adriano Arioti (RMSC-PV, age 11), Bobby DiNunzio (TIDE-VA, age 12), Landon Gentry (NCAP-PV, age 13), and Nico Butero (PEAQ-AM, age 14) being the top finishers for the men.

Next year's meet will mark the 10<sup>th</sup> Anniversary of the IMX Games being hosted by Potomac Valley and we'd love to see you on deck for this momentous occasion. 🌟

## Our Youngest Swimmers - Resilience and Positivity

By Ellen Colket

POTOMAC VALLEY - During the month of January, PVS clubs hosted nine swim meets including the Polar Bear Mini, Snow Dude Mini, Frosty Pentathlon, and the Polar Pentathlon. Close to 50% were geared toward our youngest swimmers who bring so much enthusiasm, excitement and a wonderful competitive spirit to the deck.

I had the pleasure of officiating one of these meets and can tell you that the joy and camaraderie is so palpable and these young athletes are unstoppable in their support for one another.



Always seeming to travel in groups, chatting, laughing and cheering on one another, I was moved by the will and tenacity of these young athletes. As I passed by one swimmer, he was talking about how he had broken his arm, but still got in the pool to practice and keep up his strength. He turned and said, "It was a tough recovery, but I am back." Well said by a seven year old. Another overheard our conversation and jumped in to say, "Yes, this is my insulin pump, but it won't stop me."

How inspiring to hear these young athletes talk! I walked away grateful to have been on deck and learn from our youngest how to take on life and whatever it has to throw at us. 🌟

---

 DRY LAND
 

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Most officials are parents and we do what we can to support our children in their chosen sport. From rinsing out their suits to driving them to practice and meets, many of us try to help them with their nutritional needs. Probably the most popular dinner served to an athlete the night before a big meet is pasta.

When we talk about pasta, we must first define the term. The word "pasta" is generally used to describe the Italian unleavened dough consisting of ground durum wheat and water or optionally eggs.

A common belief about pasta is that it was brought to Italy from China by Marco Polo during the 13th century. That Marco Polo introduced pasta to Italy was an advertising story invented in the 1920s and printed in the Minnesota Macaroni Journal.

Noodles existed in Asia long before Polo's trip to China. Though there are many theories, archaeologists believe that nomadic Arabs are responsible for bringing early forms of shaped dough westward. Once reaching the Mediterranean, durum wheat (developed in Sicily around 1154) became the ingredient of choice because when durum wheat pasta is dried, it lasts indefinitely, making it a very convenient food to store in a time without refrigeration.

With a climate suited to growing fresh vegetables and herbs and, with pasta's shelf life, versatility, and affordability, it became firmly rooted in Italy's Mediterranean cuisine; tomato-based sauces remaining the most popular ingredient.

For us here in the United States, early Spanish settlers were among the first to bring pasta to America. It was Thomas Jefferson that helped give pasta an initial push into popularity. During an extended stay in Paris, Jefferson ate what he called "macaroni". When his supply ran out, he would order more from a friend in Naples.

The word "macaroni" first appears in the English language at the end of the 16th century. It is a derivation of the Greek word "makaria" meaning "food from barley", but some linguists suggest it is a derivation of the old Sicilian word "maccurruni", which described a doughy food.

There are 310 specific forms known by over 1300 names and one of the better pasta dictionaries can be found at <https://pastafits.org/pasta-dictionary/>

Now, about cooking pasta -

Today, pasta is generally cooked by boiling the dough. The first evidence of pasta being boiled comes from the Talmud, which discusses whether or not boiled dough should be considered unleavened bread under Jewish law. Pasta was likely boiled before the Talmud was written, but this is the first text reference to the cooking

method. Early pastas were sweetened with fruit and could be fried or baked as well as boiled.

First and foremost, the

water should be salted. A good rule of thumb is three rounded tablespoons per every six quarts of water. Second, never rinse pasta as not only does it cool it off, it removes the gluten sheath formed during cooking. Thirdly, pasta should never be overcooked. The Italian phrase is "al dente", meaning "to the tooth". A white ring should be seen inside the cooked pasta when it is removed from the water. Overcooking pasta raises its glycemic index and negates the beneficial slow digestion it normally undergoes. Another "no-no" is oiling pasta to prevent it from sticking.

(Please see [PASTA](#), page 10)

## How to be a Penne Pincher, or My Life as an Impasta

By Steven Strazza



## The PVS Evaluator and Clinic Presenter

By Rich McMillen

As probably many of you have already seen in the posting to the Google PVS Official's email group, the PVS Officials Committee recently voted to establish minimum qualifications and processes to apply to be a PVS evaluator/clinic presenter. Allow me to take a few moments to delve slightly deeper into the topic using the forum of the News Magazine.

At the NCI meet, we were pleased to have with us Melissa Hellervik-Bing from the National Officials Committee. She is also the lead national evaluator for USA Swimming. During one of the briefings, Ms. Hellervik-Bing discussed a new approach the national officials committee was taking in order to promote growth and skill development among up and coming officials. As she described, this is a necessary function to replace officials who retire out. There needed to be a mechanism by which the wealth of experience of these officials was passed on to those who would succeed them.

Here at PVS, we have a commitment to that belief structure. As officials have grown in their experience and exposure, that knowledge should be available to those who desire it. Some officials wish to pursue only dry-side or only wet-side experience on the deck, but that shouldn't exclude them from being to progress to higher certification levels and offer something back to the LSC in teaching and mentoring. Some of you have already expressed an interest in this approach to officiating. Not everyone wants to be a deck referee.

With this philosophy in mind, the PVS Officials Committee invested effort into developing a program that complements the path

set by the national committee and helps to keep PVS at the forefront of officiating excellence.

As the group email described, there are six positions covered by the new processes. These are: ETS Operator (TO), Computer Operator, aka Hy-tek (CO), Administrative Official (AO), Chief Judge (CJ), Starter (SR), and Deck Referee (DR).



Rich McMillen

Additionally, anyone approved to be a clinic presenter for the wet-side positions would also be authorized to present stroke and turn clinics.

One might quite reasonably ask the question, that even with the completion of the necessary training, meet participation; and mentoring activities, why is approval still required by the official's committee? Review and approval forms a system of check and balances. What is not desired is a "production mill" by which simply completing a set of basically self-administered tests and reviews churns out evaluators and presenters. Much like the insurance company acts as a brake against continued poor driving, the official's committee review is a check point to ensure that only quality information is passed to the next generation of officials; otherwise, the potential for the process to become a game of "telephone" increases dramatically.

I encourage all PVS officials, if they have an interest, to review the group email, study the requirements, and then make an application. Nothing would please

the officials committee more than to have depth and breadth in our officiating pool (excuse the pun) thus bringing PVS to the forefront of excellence in officiating across all of USA-S. 🇺🇸

### Thoughts From



### The Chair



# ASSAULT

*Continued from Page One*

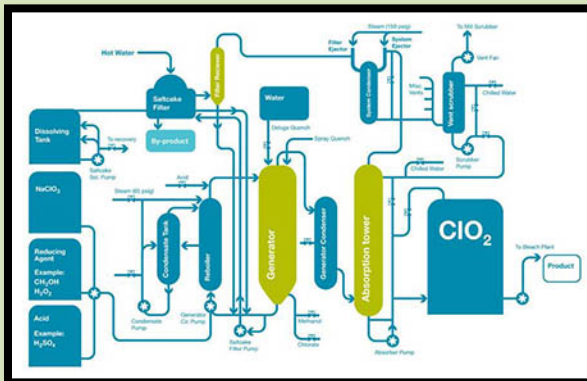
popularity of de-ionizing salt.) In crystalline form, it forms hypochlorous acid when mixed with water

As has been stated, all forms of pool chlorine form hypochlorous acid

(chemically HOCl). Being an acid, the disinfecting agent is the hypochlorite ion (OCl<sup>-</sup>), which readily passes through the cell membranes of bacteria; attacks water based plant growth (such as algae,) and interferes with the reproductive cycle of viruses. The amount of hypochlorite ion found in pool water is referred to as the amount of available "free chlorine."

Counter intuitively, the use of liquid chlorine or calcium hypochlorite to produce hypochlorous acid actually raises the pH of pool water (the sodium compound more so than calcium) due to the release of elemental calcium or sodium. As the pH increases, the effectiveness of chlorine decreases and therefore another acid (typically hydrochloric acid, or HCl) must be added to the water. A chemical known as cyanuric acid ((CNOH)<sub>3</sub> or 1,3,5-triazine-2,4,6-triol for the chemistry majors) is used in pool water to "stabilize" free chlorine. In simple terms, cyanuric acid "wraps itself" around the chlorine ion allowing it to dissipate slowly and to shield it from ultraviolet light degradation. Its use is highly advised in outdoor pools because of the degrading effects of sunlight.

A healthy pool is one in which the amount of free chlorine is between one and three parts per million (ppm). Any higher than this and the chlorine level produces an effect commonly referred to as "swimmer's itch." The pH of pool water should be at 7.4 since this is the pH level of human eyes and mucous membranes. The balancing of pool water chemistry can be quite



*The process to manufacture chlorine dioxide*

tricky and more art than science since chlorine based chemicals used for sanitation change the pH. This chemical dance becomes more convoluted when consideration is given to managing the amount of dissolved solids and other chemicals (such as copper).

With this basic understanding of pool chemistry, we return to the

original question. Is chlorine the culprit for "bad air"? The answer is - not directly.

Chloramine compounds exist when there is insufficient free chlorine to bind to contaminants that are formed by humans being in water. Oddly enough, chloramines are used as a secondary disinfectant in public drinking water. Due to swimmer metabolism, the cation ammonium is excreted through sweat and urine as a result of urea production. If the pH of the pool water begins to rise, ammonia gas is produced and becomes the source of runny noses and the acrid taste



*Sodium Hypochlorite is also the active ingredient in bleach*

one may develop. In short, the produced ammonia exceeds the rate by which it can be combined with the free chlorine and its presence chemically burns the soft tissue of the mouth and respiratory tract.

The activity between chlorine and contaminants is identified by the chlorine demand curve. This charting process measures the available free chlorine to the applied chlorine dosage in mg/L. At the beginning of the curve, chloramine production is at its highest with the formation of monochloramine (chemically NH<sub>2</sub>Cl). The curve peaks when chloramine decomposition begins (i.e. the chloramine molecule binds with

*(Please see ASSAULT, next page)*

## ASSAULT

*Continued from Previous*

the free chlorine ion.) The curve crashes to the breakpoint when chemical analysis detects free chlorine in the water. As the available free chlorine is used up, the curve repeats.

It is monochloramine that is responsible for the "chlorine smell" of swimming pools and is also the major cause of burning eyes and respiratory problems described as "bad pool air." Chloramines are gases that evaporate at the surface and, because they are heavier than "air", tend to settle closer to the pool water. When the water is turbulent, typical of a swim race, they are detected at heights between four and six feet, which happens to be the stature range of most officials and coaches leaning over the edge.

The introduction of fans may help to relieve the pool deck temperature, but they work against air quality by dredging chloramines up from close to the pool surface, mixing them with the good air, and then circulating them.

Air replacement (i.e. opening the doors) is not a practical solution as it cannot move the volume of air involved. Fresh air advances the rate of chloramine evaporation and does nothing to reduce the rate of contamination. Since



chloramines are gases, ozone and UV light are very effective at breaking down these chemical structures, but require the

infrastructure to support their use.

The simpler answer is to add chlorine to the pool water under periods of high demand such as occurs during a swim meet. Increasing the amount of free chlorine greatly reduces the production of chloramines thus improving air quality and the sanitation of the water. On the down side, it requires measuring the free chlorine levels every fifteen minutes as opposed to once every one or two hours, which is a common practice. Logistically, when things begin to get out of hand, adding large amounts of chlorine to

adjust the water chemistry requires an hour or so of no pool usage to allow chloramine levels to diminish, though such a gap is not typically available between meet sessions.

At an outdoor pool where chloramine gasses are easily swept away by natural air movement, the presence of a chlorine odor indicates a severely under sanitized environment. So, the next time you approach a pool and you smell chlorine, it's not because it's over chlorinated, but because it is under chlorinated. ☹

## Pasta

*Continued from Page 7*

Oiling pasta (unless olive oil is your garnish) only adds unnecessary fat and prevents the sauce from adhering to it. To keep sticking to a minimum, after draining, place the colander (with pasta inside) back into the cooking pot and cover it. Be sure the cooking pot is removed from an active heating element.

Cooked pasta may be refrigerated covered for up to one week and microwaved to be reheated.

When cooked, plain pasta is composed of 62% water, 31% carbohydrates (26% starch), 6% protein, and 1% fat. A 100g portion of non-enriched cooked pasta provides 160 calories and 15% of the RDA for manganese. ☹

## Potomac Valley Swimming Official's News Magazine

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Tom Ugast, General Chair  
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